

## CALL MY AGENT

QuickStudy looks at agent technology and how it can find what you need on the Web. Page 69

## KNOW ORACLE?

Your skills are in high demand. Find out from the experts who the real pros are. Page 80



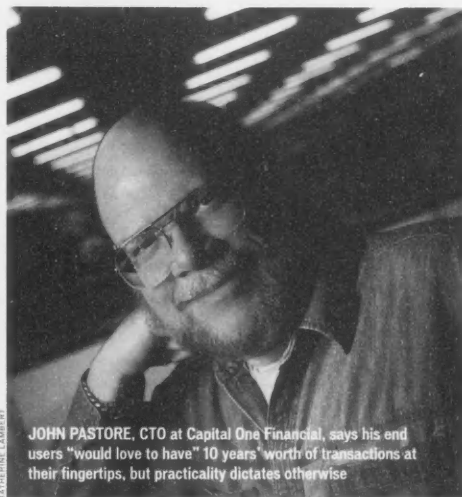
## GETTING PERSONAL

E-commerce veterans share their experiences with Web personalization. Page 74

# COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS • WWW.COMPUTERWORLD.COM

MARCH 22, 1999 • VOL. 33 • NO. 12 • \$4/COPY



JOHN PASTORE, CTO at Capital One Financial, says his end users "would love to have" 10 years' worth of transactions at their fingertips, but practicality dictates otherwise

## TERABYTE HEADACHES

**T**HE AMOUNT OF DATA stored on desktops, servers and mainframes is doubling annually. Internet downloads, intranet pages, multimedia files and data warehouses are

threatening to swamp database administrators, reports *Computerworld* editor-at-large Gary H. Anthes. In fact, the amount of storage managed by the typical administrator has jumped 70% in two years and will nearly triple again over the next four. Sure, you can throw more disks at the problem — but that just adds to the technical and management challenges.

Report starts on page 72

**STORAGE**

## BANKBOSTON IT MAY TAKE BIG HIT

*Fleet CTO: Fleet will dominate in U.S., BankBoston overseas IT to remain intact*

BY THOMAS HOFFMAN

Fleet Financial Group Inc., which historically has taken a "brutal" approach to acquiring other banks, may fire a large portion of BankBoston's 1,200 IT employees after year 2000 and systems consolidation work is completed, analysts said.

"Fleet will basically fire everyone from the BankBoston side," predicted Octavio Marenzi, an analyst at Meridian Research Inc., a Newton, Mass.-based financial services consultancy. He was referring to Fleet's plans to acquire its crosstown rival in a \$16 billion deal announced last week. The combined company will be called Fleet Boston Corp.

Although branch managers, tellers and call center agents are most vulnerable, Marenzi said he expects that 75% of

BankBoston's information technology staff "will be let go in the next 18 months" because most programmers and IT operations staff from BankBoston won't be needed after the systems integration. "You don't need two staffs to manage or enhance one Internet banking system," Marenzi said.



FLEET CTO Michael Zucchini: Layoffs are still being discussed

"We won't discuss the number of total cuts," said Michael Zucchini, Fleet's vice chairman and chief technology officer. "We need to take a finer look at [systems] conversions. [In general], there's a great area for programmer demand."

However, he did concede that "on the domestic side of BankBoston, where there's overlap, we'll probably go with [Fleet systems]. That's the preliminary analysis."

Zucchini noted that Fleet instituted a hiring freeze last

week designed to minimize layoffs and give both Fleet and BankBoston employees first crack at open jobs.

In previous mergers, Fleet has scrapped the purchased bank's computer systems and forced the new entity to adopt Fleet's IT architecture. Fleet laid off nearly 6,000 workers

BankBoston, page 16

## MICROSOFT TO BEEF UP SUPPORT

*Gates pledges help; users see improvements*

BY SHARON GAUDIN AND KIM S. NASH

Microsoft Corp. next month will announce a souped-up customer-service plan designed to staff the company's call center with more technically experienced personnel, send support staff to customer sites and change the way support contracts are bundled. *Computerworld* has learned.

The announcement is slated to come at a time when some

Microsoft, page 95

## SHOP FLOOR STRUGGLES WITH INTRANETS

*Devices, protocols add to project complexity*

BY JAIKUMAR VIJAYAN AND CAROL SLIWA

Corporate portals may offer a great way to make critical company information available online.

But the data and systems integration needed to mold shop-floor information into

formats that can be universally accessed via industry-standard browsers poses a challenge for manufacturers.

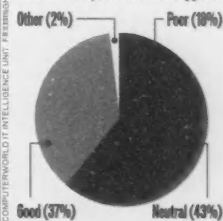
That's because of wide differences in the systems used on the shop floor and on the business side, said attendees at the National Manufacturing Week trade show in Chicago last week.

The issue "assumes impor-

Intranets, page 16

## Service Rating

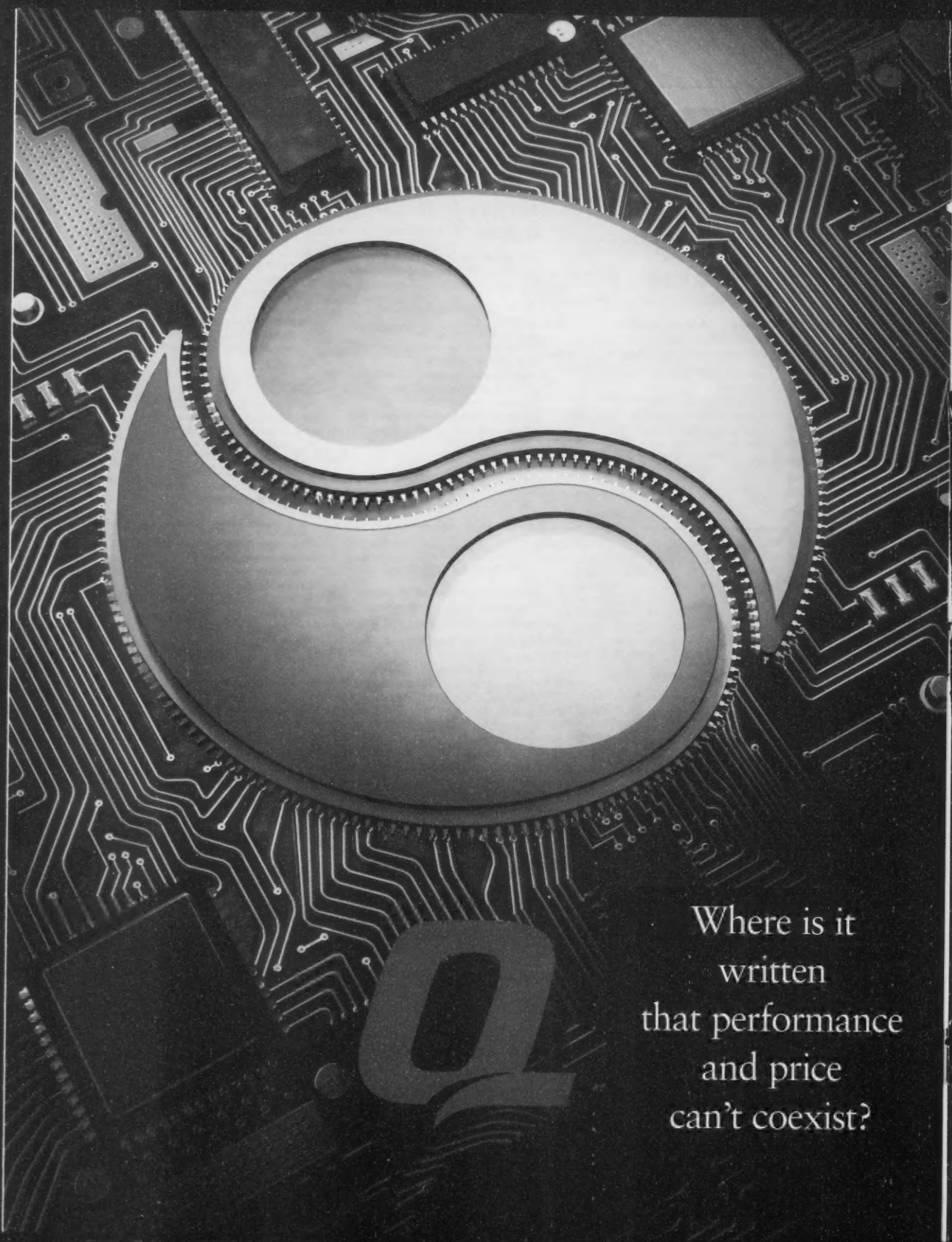
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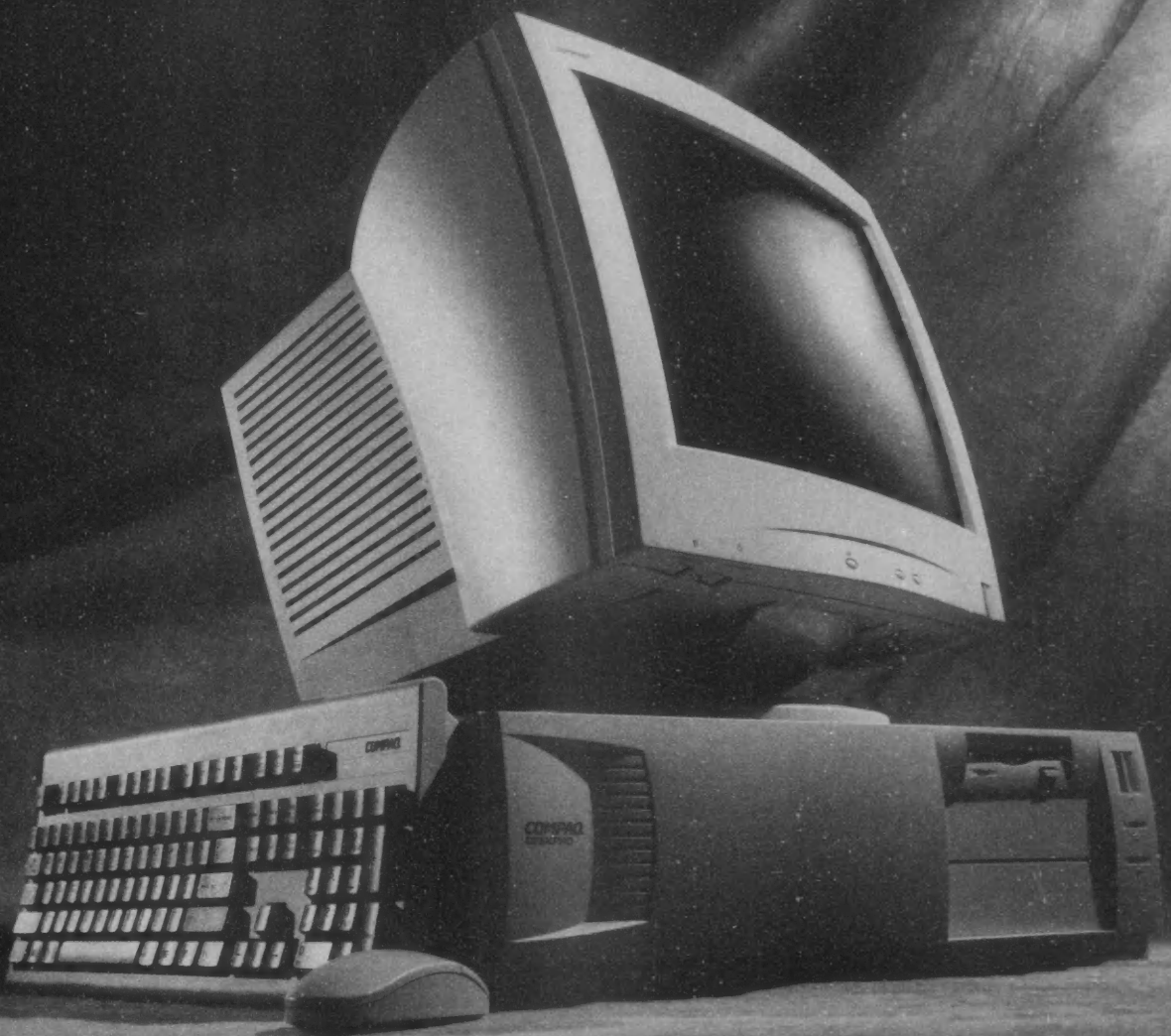
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## SILICON PRAIRIE?

"Silicon" nicknames are being applied to areas all over the country. But where does the moniker mean jobs, and when is it just hype? Page 50



## TOKEN APPRECIATION

Tokens (such as Security Dynamics' SecurID, shown here) have been around for years. But in today's takeover-happy climate, IT has found a use for them: as convenient postmerger data-access devices. Page 64

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- 8 **INTEL THREATENS** the supremacy of high-end RISC systems with new Xeon chips.
- 10 **PRIVACY SEAL CERTIFIES** that sites use data respectfully; critics call it an empty promise.
- 14 **THIN-CLIENT SOFTWARE** divvies up bandwidth and sets priorities for critical apps.
- 16 **UTILITY CONNECTS** to customers online using innovative Internet-only business model.
- 20 **IE5 LEAPFROGS** other browsers, but it's not a must-have upgrade, review shows.
- 29 **USERS ACCUSE** Red Hat Software of trying to hijack Linux, pushing development harder than standards group.
- 30 **Y2K SELF-EVALUATIONS** aren't worth the paper they're printed on. Insist on audits, William Ulrich recommends.
- 31 **MONOPOLIES FADED** in high tech even before Wintel suits, David Moschella writes.

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- 40 **WELLS FARGO TESTS** selling advertising at ATMs; sees captive audience.
- YEAR 2000
- 41 **BIG COMPANIES LAUD** federal subsidies aimed at their smaller suppliers.
- 42 **SALESPeOPLE FLOCK** to contact management — if you don't call it sales automation.
- 44 **ONLINE RÉSUMÉS BRING** lots of candidates, but are they who they say they are?
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- 50 **TOWNS GLOM** onto "Silicon" nicknames, but which ones are good markets for tech jobs?
- 53 **VERBIFY CYBERNOUNS?** Never! rules Anne McCrory, as the Jargon Judge.
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- ADVICE
- 56 **FRAN QUITTEL OFFERS** ideas for how to get that hot Web job when you're being overlooked.

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- 62 **NET APPLIANCE** may bring mainframelike fault tolerance and recovery to Web servers.
- 63 **XML ADOPTERS** like what they see but want more tools and resolved standards.
- HARDWARE
- 64 **PENTIUM IIS** will dry up in September, analysts say, forcing IT to buy pricey Pentium III PCs.
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- 72 **STORAGE NEEDS** are skyrocketing. Here's how to stay ahead of the game.
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- 80 **ORACLE SKILLS** are in demand. Find out from the experts who the real pros are.



## WASHINGTON WALLOWS IN IT ISSUES

6

Info warfare threatens everyone, but feds need more data on cracking incidents than companies provide. Both sides are working on ways to make alliances easier — and safer.

9

Advocates struggle to pass privacy legislation, as new potential threats develop.

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Fed Y2K costs may double. Government IT struggles to find warm bodies. And the FTC finally settles with Intel.

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Reno proposes security infrastructure to protect banks from increasing risks online.



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## AT DEADLINE

### First Union Bank Cuts 150 IT Jobs

Five percent of First Union Corp.'s information technology staffers were dismissed during a restructuring announced Friday by the Charlotte, N.C.-based bank, according to a bank spokesman. Of the 150 IT employees dismissed, a "significant" portion were transferred to Billerica, Mass.-based Wang Laboratories Inc., which supports First Union's desktops. First Union said it would take a \$250 million charge against first-quarter earnings to cover restructuring, including layoffs of 5,850 of its 79,000 total employees.

### DOE Seeks \$8M To Fight Cybercrime

Responding to the controversy over reported leaks of U.S. nuclear secrets to the Chinese, U.S. Energy Secretary Bill Richardson said he will seek an extra \$8 million in counterintelligence funds to fight cybercrime. The money would help the agency fight off hacker attempts and screen for sensitive e-mail originating from its facilities.

### FTC, Privacy Groups Meet on Intel Chip

Federal Trade Commission (FTC) officials last week met with representatives from the Center for Democracy and Technology (CDT) and other privacy groups concerning a complaint they filed on Feb. 26 against Intel Corp., said Ari Schwartz, a policy analyst at the CDT. The complaint asks the FTC to halt distribution of the new chip. A serial number on the chip can be used to track computers.

### Short Takes

GENERAL MOTORS CORP.'s Buick division said it would offer to visitors who fill out a questionnaire at its [www.gmbuyer.com](http://www.gmbuyer.com) Web site \$500 coupons toward buying or leasing a Buick Regal at any dealer. ... Congress is considering providing protections for databases that fall outside of copyright law such as collections of public records.

## SYBASE SERVER TO GET MANAGEMENT TOOL

*Savant's Q Diagnostic app will be built in to next version of enterprise database*

BY STEWART DECK

**S**YBASE INC. will announce an agreement with Savant Corp. next week to integrate system management capabilities into the next edition of Sybase's enterprise database server, *Computerworld* has learned.

That next release, due in the second half of this year, will include Savant's Q Diagnostic tools for performance moni-

toring and other key administrative tasks.

The move addresses a longstanding problem that has held the Sybase database back from wider acceptance by makers of enterprise resource planning (ERP) and other third-party software, analysts and users said.

"This sounds like a terrific idea. One of the few complaints I have with Sybase is the lack of performance moni-

toring tools for the database," said Michael Heaney, database manager at The Institute for Genomic Research in Rockville, Md. "There are some expensive third-party tools out to do some of this, but I think this should be a core part of the database."

The deal will provide Savant with exclusive, 18-month access to Sybase programming interfaces.

With such access, Savant can tailor its management features to the database.

"In general, you want to make the life of the database administrator as easy as possi-

ble," said Michael Schiff, an analyst at Current Analysis Inc. in Sterling, Va. "Any step that Sybase takes to do that would improve their chances" of being used by ERP and other software system vendors, Schiff added.

The Savant capabilities will give database administrators an administration facility within a management console so they can check on a database's status and drill down into specific details about any trouble spots.

"This will be a significant improvement in the types of monitoring" database administrators can do, said Jim Griffin, marketing director of Sybase's enterprise solutions division. "Savant's really good at providing a visual representation of performance," he added. ■

## SAP, ERP Rivals Will Add Simpler Interfaces

*Upgrades target biggest sore spot for users*

BY CRAIG STEDMAN  
PALO ALTO, CALIF.

The ease-of-use bug is biting ERP vendors big-time.

SAP AG, Oracle Corp. and PeopleSoft Inc. last week all said their enterprise resource planning (ERP) applications will be upgraded later this year with new user interfaces meant to make the packages less gray and forbidding to users.

Now, ERP software often forces users to click through multiple screens to enter orders and run other business transactions. And that becomes a bigger sore spot as ERP systems are opened up to more and more employees.

For example, New York-based Bristol-Myers Squibb Co. had to customize the user interface that comes with SAP R/3 to make it less complicated for the many workers who use the software to order supplies.

More than 5,000 users log in to the consumer products

company's R/3 system daily, said Frank Ragany, director of an accounting team at Bristol-Myers.

He said he hopes the friendlier user interface SAP promised will "be better able to meet our needs."

SAP last week offered a first peek at the new R/3 at its software lab here. Due for limited shipments in July, the R/3 4.6 upgrade includes a more colorful look, menus tailored for a variety of different jobs and a first step toward streamlining the number of screens users have to contend with.

The German vendor's top rivals are also in redesign mode. Oracle said a combined release of its ERP and front-office software due out by year's end will have a simplified user interface (see story at right).

And PeopleSoft has decided to tie a new user interface modeled after Internet portals to its full ERP suite as an alternative to the current Windows

screens. That interface, also scheduled to be ready late this year, was originally meant only for an upcoming series of self-service intranet applications.

SAP's redesign has been in the works for nine months. Usability and design specialists were brought in, and R/3 developers sought input from

end users at Bristol-Myers and about 1,000 other customers.

Ease of use is also a priority for Petrozuata CA, an oil company in Puerto La Cruz, Venezuela, that later this year plans to double its R/3 installation to more than 600 users.

Training users can be "very hard" now, but R/3 4.6's frame-based screen design looks easier to grasp, said Marisela Castro de Clifoni, an SAP support specialist at Petrozuata. ■

## Oracle's Front Office Upgrade to Support R/3

BY CRAIG STEDMAN

Oracle Corp. is embarking on a three-pronged strategy to raise the profile of its new front-office software for sales, marketing and customer service.

In the next couple of weeks, Oracle will detail plans to make those applications available to users of SAP AG's R/3 enterprise resource planning (ERP) system. The front-office line currently works only with Oracle's own ERP suite.

R/3 support will be followed next month by the release of an Oracle Front Office 3i upgrade tied to the Oracle8i database, said Mark Jarvis, the vendor's senior vice president of worldwide marketing.

And at its application user group's spring conference in

San Diego, also next month, Oracle plans to demonstrate a unified ERP and front-office package that's due late this year. The products will still be priced individually, but their different user interfaces will be replaced by a single, standard appearance, Jarvis said.

SAP is also developing front-office applications, starting with sales force automation software set for release by midyear. Analysts said it's uncertain if many R/3 users will buy Oracle's front-office applications. But Oracle's support for R/3 shows that it has "real products and [that] SAP is still starting out in this market," said Josh Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif. ■

### JUST THE FACTS

#### SAP Gets Friendly

What will R/3 4.6 have? Multiple screen colors, 80 to 120 job-specific menu structures and simplified workflow for about 50 key transactions.

When will it be available? July for shipment to a group of early users, with general release expected in September.

What about existing releases? They won't be retrofitted with the new user interface but will be able to share data with R/3 4.6.

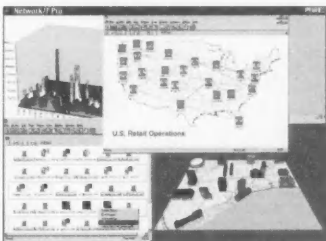
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Frame Relay Option	✓	
Frame Relay Service Option	✓	
Historical Trending	✓	✓
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# GOVERNMENT SEEKS DATA ON INDUSTRY CYBERATTACKS

*Protections may weaken firms' reluctance*

BY PATRICK THIBODEAU  
WASHINGTON

**I**F THE FEDERAL government wants businesses to provide it with sensitive data about cyber-attack incidents, it needs to establish a "trusted environment," urged retired Air Force Gen. Robert Marsh, former chairman of the President's Commission on Critical Infra-

structure Protection, at a U.S. Senate subcommittee hearing here last week.

Companies should be able to share information with the federal government without fearing "damage to their reputation" or "some regulatory backlash," Marsh said. Companies generally have been reluctant to report cyberattacks because of fears of bad publicity.

But federal agencies say they need incident information to build databases and are looking for ways to protect companies that share such sensitive information.

Marsh and Arthur L. Money, CIO at the Department of Defense, told the Senate Armed Services Subcommittee on Emerging Threats and Capabilities that businesses may need incentives such as tax credits to improve security and legal changes to make it easier for them to share information.

William Randle, executive vice president at Huntington National Bank in Columbus, Ohio, said he believes that private businesses should lead the effort to improve security. But government can also play a critical role.

For instance, the banking industry, working through the Banking Industry Technology Secretariat in Washington, is creating a laboratory to test, and ultimately certify, software used in electronic commerce. The government can help by

his company. Keast said there's incredible value in the government raising awareness of cyberthreats. "It gets people's attention, and that's good," he said.

Terrell Jones, CIO at travel-reservations company Sabre Group Inc. in Dallas, said one thing the government can do is "take a unified approach to how citizens could deal securely with the government."

Provincial authorities in Ontario are issuing digital certificates to citizens for their dealings with the government. "This could go a long way to help commercial enterprises as well [because] once the consumer had the certificate ... both would be secure," Jones said. ▀



PG&E's JOHN KEAST says the government's concern "gets people's attention, and that's good"

providing information on cyberthreats and funding research and development — "which I think is extraordinarily important," Randle said.

John Keast, CIO at PG&E Corp., said he doesn't believe incentives will matter to most businesses; security of both computer networks and physical facilities "is a way of life" at

## Feds Ponder Threat of Info Terrorism

Protecting the nation against "infowar" may require incentives and new laws to induce businesses to improve their security, a U.S. Senate subcommittee was told last week.

"Infowar" was the term used to describe an organized attack by a terrorist group or nation against vital information infrastructures such as utilities and finance.

Experts say the risks are increasing. "Terrorists may have been slow to pick up on the potential of infowar thus far, but we can't risk them never making the connection," said Adam Cobb, an Australian parliamentary fellow and infowar expert in Canberra, Australia.

The subcommittee's chairman, Sen. Pat Roberts (R-Kan.), said he believes an attack of some kind is possible. "It isn't a matter of 'if' — it's a matter of 'when,'" he said.

— Patrick Thibodeau

## Open Group API Will Simplify Access Policy

*Will allow consistent managing of policies*

BY DAVID ORENSTEIN  
AND MATT HAMBLE

Information technology managers struggling to consistently apply access permission and other security policies across complex enterprises could find real relief in an upcoming move by an industry standards body.

By fall, the Open Group in Reading, England, will release the Authorization Service API (application programming interface), which will provide developers with a consistent way to program the security rules that govern which users have access to what data.

A first draft of the specification was scheduled to be released last week, said Ronald Williams, technical specialist for security management and user administration at Kaiser

Foundation Health Plan in Pasadena, Calif. Williams is a member of the Open Group workgroup creating the API.

"It is just a means by which you can apply policy consistently across multiple platforms," Williams said. "Almost anything would be better than what we have today."

Kaiser faces the huge challenge of managing access rules for more than 100,000 people, including doctors and nurses in 19 states who routinely use sensitive medical information, Williams said. The company uses several platforms, ranging from mainframes and several Unix variants, to older VAX/VMS systems and Windows. The most efficient way to handle access privileges would be to automate them in applications, Williams said, but the tremendously heterogeneous nature of the enterprise requires manual methods such as auditing.

Abner Germanow, an analyst at International Data Corp. in Framingham, Mass., said the problem also creates headaches for end users. "If you are a user accessing data in any application, you might have to type in a password each time,"

he noted. By relieving end users of that burden, Germanow added, administrators and developers can also help other IT colleagues.

Security policies are becoming more complicated for many IT shops, not only because the Internet brings more people to the gates of an enterprise, but also because electronic commerce involves pro-

viding business partners access to data, said Ian Robinson, director of the Open Group's security and electronic-commerce program. One of the goals of API is to provide users with a way to specify policies that can change or be invoked based on the situation. For instance, policies could limit certain users' access at specific hours of the day, he said. ▀

## Levi Taps Merchandising App to Track Trends

BY STACY COLLETT

Levi Strauss & Co. is adding a marketing weapon to its Levis.com and Dockers.com online shopping sites. Executives are banking on fledgling merchandising software to help the jeans maker keep up with finicky fashion tastes.

Levi is the flagship customer for San Mateo, Calif.-based Blue Martini Software Inc.'s electronic-merchandising system. The system will manage Levi's product data catalogs, which hold 7,000 stock-keep-

ing units — each with 50 to 100 pieces of information, universal product code numbers and pricing information. "This will allow us to really watch what's selling quickly and to get more sophisticated in targeting consumers," said Bob Knowles, director of U.S. electronic-commerce at San Francisco-based Levi Strauss.

Described as a cross between electronic-commerce server products and transaction and retail automation software, the electronic-merchan-

dising system integrates a commerce server with features for merchandising, targeted selling and tailored services. Five modules offer merchandise management, customer management, micro marketing and WebStore Operations, which provides tax, payment, security, shopping list and catalog operations.

Levi plans to have the electronic-merchandising system operational by summer. Prices for the full suite start at \$500,000, Blue Martini said. ▀

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## BRIEFS

## Microsoft to Revise Windows 98

Microsoft Corp. last week confirmed that it will release an interim version of Windows 98 later this year. Enhancements in Windows 98, Second Edition, will include a preinstalled Internet Explorer 5.0; Internet connection-sharing technology that lets home users connect multiple devices to the Internet via a single PC, and simplified installation and registration.

## Deep-Discount Traders Hike Fees

Several deep-discount online stock-trading firms, including Suretrade Inc. in Lincoln, R.I., have started increasing prices for portions of their trading services in the past few months following earlier moves by midprice companies like ETrade Group Inc. in Palo Alto, Calif. Analysts said deep-discount brokerages are realizing that low prices are no longer the lone attraction for customers.

## Canadian Stock Markets to Merge

Leaders from Canada's four largest stock exchanges announced plans for the Vancouver Stock Exchange to merge with the Alberta Stock Exchange and an electronic market, called the Canadian Dealer Network, run by the Toronto Stock Exchange. The scheme would create a pan-Canadian "junior exchange" for small firms and start-ups.

## Short Takes

FOSTER BANK OF CHICAGO, a \$200 million commercial community bank, has selected ELECTRONIC DATA SYSTEMS CORP. to provide its financial IT services. . . . MICROSOFT CORP. chief technology officer Nathan Myhrvold is denying recently published reports that he will be leaving his post, a company spokesman said. . . . COMPAQ COMPUTER CORP. this week will announce enhancements to its ActiveAnswers Web site to help users and its channel partners implement enterprise applications.

## COMPAQ EXPANDING NET SERVICES, PRODUCTS

Pfeiffer goal: E-commerce slate to rival IBM

BY ROB GUTH  
TOKYO

**T**HE HEAD of Compaq Computer Corp. said his company is beginning the next phase of its life, one in which a growing percentage of its revenue will come from Internet-related services.

"A major portion of our revenues comes from services, and that will grow as a percent of the overall share of Compaq," said Eckhard Pfeiffer, Compaq president and CEO, in a speech here last week. Compaq, which built its business selling PCs and servers, is in the throes of expanding its offerings to better compete with more fully integrated computer vendors such as IBM. Compaq's recent acquisitions of Tandem Computers Inc. and Digital Equipment Corp. were made with the aim of strengthening its high-end server, services and systems integration businesses.

With the acquisitions, Compaq now has 27,000 field engineers worldwide, a force that can be used to offer services as well as hardware to customers, Pfeiffer said. "We have transformed the company from a PC company to a global IT leader," said Pfeiffer, who predicted Compaq would top \$50 billion in revenue next year. Compaq in its latest fiscal quarter reported net income of \$758 million on revenue of \$10.9 billion.

Pfeiffer said that 18% of Compaq's revenue last year came from services, and PC products (PC hardware, software and services) contributed 34%. By contrast, IBM, a recognized leader in computer services, garners more than 30% of its revenue from services.

## Intel Ratchets Up Chip for 4-Way Servers

Pentium III Xeon handles high-end corporate apps

BY STACY COLLETT  
NEW YORK

Intel Corp. is showing positive signs that its processors can hold their own against high-end, RISC-based systems in the corporate server and workstation markets.

Xeon processors quickly have ascended from 11,000 transactions/min. with Pentium II Xeons nine months ago to more than 24,000 transactions/min. with Pentium III Xeons today, while cutting the cost per transaction by 25%, said John Miner, an Intel vice president for servers.

In recent tests of four-way servers by the Transaction Processing Performance Council, an independent, nonprofit testing group in San Jose, Calif., a RISC-based, Sun Microsystems Inc. Enterprise 450

"Compaq is as serious as a heart attack when it comes to things Internet- and e-commerce-related," said Terry Shannon, editor of "Shannon Knows Compaq."

A key part of Compaq's plan to grow its services side is to focus on Internet-related services and businesses, Pfeiffer said. Other initiatives include the following:

- Strengthening its services offerings to companies setting up electronic-commerce sites.
- Integrating Web properties, including Shopping.com Inc., into its Altavista.com unit and taking the spin-off public. ■

Guth writes for the IDG News Service in Tokyo. Computerworld's Jaikumar Vijayan contributed to this report.

server performed 17,674 transactions/min. and a comparable Pentium III Xeon-based Unisys Corp. Aquanta ES5045 server performed 24,328 transactions/min.

"At this rate, they're handling most of the major transactions [enterprise] customers need to address at the hardware level," said James Gruener, an analyst at Aberdeen Group Inc. in Boston.

next month. A 550-MHz version that offers a bigger cache and supports four- and eight-way multiprocessing is due in this year's third quarter.

Pentium III Xeon four-way servers have captured the attention of firms that run electronic-commerce sites, complex databases and company-wide enterprise resource planning applications.

For example, Drexel Univer-

## Intel-Based Servers Take on the Enterprise

Intel's market share for the following server levels:

SERVER LEVEL	1998	2002*
Entry-level servers (less than \$3,000)	100%	100%
Midrange servers (\$10,000 to \$25,000)	80%	98%
High-end servers (\$100,000 and up)	10%	55%

\*PROJECTED SOURCE: QUARTERLY SERVER TRACKER Q3 1998 AND SERVER HARDWARE MARKET FORECAST OCTOBER 1998, INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

Intel formally unveiled the new Xeon here last week, and its speed is making Windows NT servers more attractive. "In the 20,000 [transactions/min.] range, multiuser NT servers not only can do more in terms of client/server applications, but can hook up thin clients or older PCs to applications that are housed on centralized NT computers," said Joe Clabby, another Aberdeen analyst.

The Pentium III Xeon family initially offers a speed of 500 MHz, with three options for cache size — 512K bytes, 1M byte and 2M bytes — for two-, four- and eight-way servers and workstations. A 550-MHz processor with a 512K-byte cache for two-way workstations and servers is expected to ship

sity is using a server with a 500-MHz Pentium III Xeon four-way processor and 2M bytes of cache to run Windows NT for streaming video, Web usage analysis and other Web support functions.

"We found it to be 60 times faster than the 233-MHz Pentium II-based server we were using previously," said Kenneth Blackney, director of core technology infrastructure at the Philadelphia university.

Observers said eight-way servers will further cut into the traditional RISC space because Fibre Channel storage, high-speed interconnect technologies and clustering middleware will become available for mainstream users when Windows 2000 ships. ■

## Corrections

A March 15 Business section story ["Federal Agencies Opt for Manual Fixes," page 50] incorrectly stated the vendor used by the Bureau of Indian Affairs to renovate its Cobol code for year 2000-readiness. The vendor is Data Integrity Inc. in Waltham, Mass.

A March 15 News story ["SAP Ser-

vice Culls ERP Payoff Data," page 1] misstated the title of Michael Cromar. He is managing director of GATX Capital Corp.'s Technology Services unit.

A March 1 News story ["Intel Promises Faster, Cheaper, Simpler PCs," page 4] mischaracterized the clock speed reached in a processor technology demonstration by Intel Corp. The processor speed exceeded 1 GHz.



## Privacy Activists Push Congress to Ease Encryption Limits

BY ANN HARRISON

With the long-stalled Security and Freedom Through Encryption (SAFE) Act inching forward through House subcommittees, Washington privacy activists are looking to increase privacy protection through government initiatives.

The SAFE Act, which seeks to lift export restrictions on U.S.-made encryption products of more than 56 bits, is being promoted by its sponsors as a step toward ensuring consumer privacy.

Rep. Bob Goodlatte (R-Va.), who reintroduced the act after it failed last year, said the legislation is needed to keep Americans safe from online predators. "Credit-card numbers can be stolen, personal medical records can be exposed, and bank deposits can be rerouted, all because of the administration's restrictive encryption policy," he said.

### Medical Records Top Agenda

Securing health care records has moved to the top of the privacy agenda. Sens. Patrick Leahy (D-Vt.) and Edward Kennedy (D-Mass.) and Rep. Edward Markey (D-Mass.) introduced legislation this month in both the House and Senate on medical records privacy.

The legislation would require informed consent before a patient's records are disclosed to third parties and would force law enforcement agencies to consult a judge before accessing medical records to investigate a crime. The American Civil Liberties Union (ACLU) is seeking a provision in the bill to notify consumers when health information has been disclosed without consent.

The ACLU has also joined a coalition of organizations asking Congress to hold public hearings on the misuse of federal databases. The request was prompted by disclosures that the U.S. Treasury Department's Secret Service hired Image Data LLC in Nashua, N.H., to build a national database of driver's license photos.

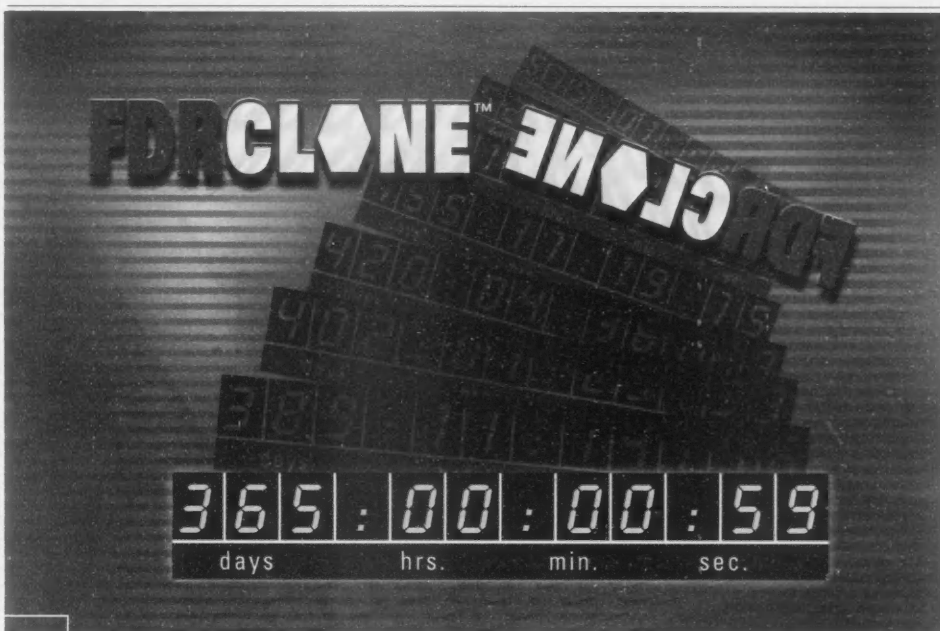
The ACLU is calling on Congress to close loopholes in the 1994 Driver's Privacy Protec-

tion Act, which it said fails to prevent states from selling or disclosing personal information without drivers' consent.

"We have a partnership of government and private industry to collect information, and we can't simply allow the mar-

ketplace to decide what privacy rights are," said Barry Steinhart, associate director at the ACLU.

Privacy activists are also monitoring a request by Attorney General Janet Reno that the National Commission on the Future of DNA Evidence study the legality of taking DNA samples from all persons arrested. ■



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## BETTER BUSINESS ONLINE? MAYBE

*Bureau to report privacy offenders; activists skeptical*

BY ANN HARRISON

**I**N AN EFFORT to demonstrate industry self-regulation, the Better Business Bureau Online last week announced a privacy seal that companies can place on their Web sites to show they're voluntarily following the bureau's privacy guidelines. But watchdogs charge that the initiative — like another one before it — lacks teeth.

Web sites posting the BBBOnline seal will agree to disclose what information a Web site collects from visitors — like installing cookies or data that displays the domain name of the visitor — and to explain what it does with that data. Also, sites that rent out their customer lists to third parties must give consumers a chance to remove their names beforehand.

Dell Computer Corp. was the first to place a seal on its site last week, and 350 more have applied for one, according to BBBOnline. A similar program run by Truste in Palo Alto, Calif., is 3 years old and has 500 licensees, including America Online Inc. and Microsoft Corp.

Pricing for two services ranges from a few hundred to a few thousand dollars, depending on a site's complexity, and they operate slightly differently.

Truste monitors member sites and helps companies create privacy poli-

cies, said Anne Jennings, marketing communications manager at Truste. BBBOnline will conduct surprise audits on licensees and publicly identify companies that don't comply, as well as report them to the Federal Trade Commission for legal action, said Russ Bodoff, CEO of BBBOnline.

Before granting a seal, BBBOnline will evaluate how Web site operators secure the data on their servers and how information is moved within the company, he said.

Privacy groups are skeptical whether groups like Truste and BBBOnline can hold companies accountable for their actions, especially because they're bankrolled by major technology companies.

But Kate Delhagen, an analyst at Forrester Research Inc. in Boston, said the entrance of BBBOnline may help widen acceptance of privacy seals among smaller electronic-commerce operators. "The [Better Business Bureau] has great local penetration, and there is no reason why local retailers shouldn't support this cause and ease consumers' fears about security," Delhagen said.

Jason Catlett, president of Junkbusters Corp., a Green Brook, N.J.-based privacy watchdog group, said that as a nonprofit group, BBBOnline can't legally enforce privacy violations. ■



**CEO RUSS BODOFF:** BBBOnline will report firms that violate privacy rules



## Microsoft Issues Two Privacy Patches for Windows 98 Glitch

BY ANN HARRISON

Microsoft Corp. last week posted two software patches on its Web site that will disable identifying numbers generated by the Windows 98 software registration process. The company also confirmed that the identifiers could be embedded within Word and Excel documents created with Office 97.

The first patch prevents the insertion of the identifier number in all new Office documents; the second removes the number from previously created Office documents. The patches are available at [officeupdate.microsoft.com/nonIE4/articles/privacynomie4.htm](http://officeupdate.microsoft.com/nonIE4/articles/privacynomie4.htm). Ari Schwartz, a policy analyst at the Center For Democracy and Technology in Washington,

said release of the patches shows that Microsoft is responsive to some privacy concerns but added that he wants the company to build privacy safeguards in to its programs instead of being forced to issue patches.

"We must be vigilant to get them to think of privacy as a design feature as they think of security as a design feature," he said.

The identifier was slammed by privacy activists, who said it could be used to trace authors of electronic documents. Microsoft said it never linked the identifier with customer lists to track documents and promised that the forthcoming release of Office 2000 won't insert unique identifying number in documents. ■

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# UNCLE SAM SEEKS FIX FOR IT LABOR CRISIS

*Entry salaries noncompetitive; feds face wave of IT retirements*

BY PATRICK THIBODEAU  
WASHINGTON

**G**OVERNMENT CIOs say they face a potential IT labor crisis if they can't find ways to compete with the private sector, particularly in hiring entry-level employees.

The hiring problem is being exacerbated by a statistical bubble in the government's information technology labor force: As many as half of the roughly 80,000 current federal IT workers will be eligible for retirement by 2006, said Ira Hobbs, deputy CIO at the U.S. Department of Agriculture (USDA). Hobbs is leading the training and recruitment effort at the federal CIO Council.

Retaining and recruiting federal IT workers was a key topic here at last week's annual FOSE conference on government IT issues.

A major sticking point is salary. The best the government can offer a new college graduate with a computer-related degree and top grades is about \$35,000. Most starting wages are less than \$30,000,

Hobbs said. But typical industry entry-level IT salaries are \$40,000 to \$50,000, according to a recent *Computerworld* salary survey of 807 IT managers and executives.

The government is having most success recruiting private-sector employees with 10 years or more of experience for midlevel IT jobs. Family-friendly hours and government benefits mean a lot to older workers, said Frederick Thompson, who heads the training and recruitment program for the USDA. "Those are the people we are attracting," he said.

The average salary for experienced federal IT workers is \$60,000, vs. anywhere from \$50,000 to \$100,000 plus bonuses in the private sector, according to the *Computerworld* salary survey.

Federal officials are trying various strategies to attract workers. For instance, in an ex-

periment last year, the Internal Revenue Service posted job openings for 20 senior-level IT and legal positions in both newspapers and Web-based job services. The newspaper ads drew 60 applicants, while the Web-based ads brought in 600 résumés, said Linda Wallace, the IRS's webmaster.

The CIO Council is working with universities, including many in the Washington area, to develop federal-specific IT management programs.

Recruitment and training were key issues at FOSE, but the year 2000 remained important. The focus seemed more on year 2000 lessons — especially the importance of good management, said Kathy Adams, the assistant deputy director for systems at the Social Security Administration. Federal IT departments that were well organized and managed had an easier time dealing with year 2000, she said. ▀



**SSA'S KATHY ADAMS**  
says good management is key to year 2000 success

## CAPITAL WATCH

### D.C. Notes: Y2K Liability, Tax Credits

WASHINGTON

■Federal judges are opposing several bills limiting year 2000 liability because they would create more work for them. The Judicial Conference of the United States, headed by Supreme Court Chief Justice William J. Rehnquist, last week said that plans in some of the bills to expand federal jurisdiction over class-action, year 2000-related lawsuits "hold the potential for overwhelming" the courts. Congress is considering year 2000 liability measures.

■The U.S. Federal Communications Commission last week adopted regulations requiring long-distance carriers to post their rates "in an easy-to-understand, clear format." The FCC is recommending that carriers post the rates on a Web site.

■The federal government is working on regulations that would

determine who gets research and development tax credits for software development. Joseph Gutentag, a senior adviser at the U.S. Tax Office, said the rules would replace the "subjective test" in determining who gets the credit with a plan that looks at "evolutionary" advances. The rules will be finalized this year.

■Network Solutions Inc. in Herndon, Va., won a short-term victory in federal court last week, to keep its monopoly on Internet domain registrations. A U.S. district judge ruled that Network Solutions contracted with the federal government to issue the domains and thus is covered by the government's antitrust exemption. PGMedia Inc. in New York had sued to overturn Network Solutions' monopoly, so it could issue new top-level domain names, including .firm, .rec and .store.

— Patrick Thibodeau

## Feds' Y2K Costs Go to \$6.8B

*80% of critical systems compliant so far*

BY PATRICK THIBODEAU  
WASHINGTON

The cost of making federal government systems year 2000-compliant reached \$6.8 billion last week, an increase of nearly \$3 billion from an estimate made one year ago, according to the latest estimates from the U.S. Office of Management and Budget.

In a report issued last week, the OMB said 80% of all federal mission-critical systems were year 2000-compliant but that the progress at three major federal agencies was "inadequate."

Those agencies are the U.S. Department of Transportation, the U.S. Department of Health and Human Services and the U.S. Agency for International Development.

"If this is the best positive spin, there is cause for concern," said Howard Rubin, a research fellow at Meta Group Inc. in Stamford, Conn. The OMB should be talking about contingency planning at this point, he said. The report will

add more fuel to the congressional criticism of the government's year 2000 effort.

Part of the issue stems from the OMB's March 31 deadline to have all mission-critical federal systems year 2000-compliant. The Federal Aviation Administration, which is part of the Transportation Department, doesn't expect to be done by June 30. But the OMB said the FAA has consistently met the deadlines it set on year 2000.

But Health Care Financing Administration CIO Gary Christoph, whose agency is part of Health and Human Services, said the OMB review doesn't get at the actual issues involved with the project.

His agency is working with 40 contractors to repair 78 medical claims systems across the country. That's made it difficult to control the project, but Christoph said he's also set tough standards for compliance — requiring contractors to run end-to-end tests on as many as 35,000 test claims. ▀

## FAQ: FTC/Intel Settlement Details

**What was the Federal Trade Commission's vote on the Intel settlement?** The FTC voted 3-0, with one member absent, to approve the settlement and make public the seven-page agreement. The settlement still faces a 60-day public comment period before becoming official.

**How does the settlement address the FTC's charges?** The FTC filed charges in June accusing Intel of using its market power to maintain dominance over the microprocessor market by denying three customers (Digital Equipment Corp., Compaq Computer Corp. and Intergraph Corp.) continued access to technical information and product samples needed for developing processors.

The settlement would prohibit Intel from withholding technical information or refusing to sell microprocessors to a customer involved in a dispute over intellectual property unless the customer is seeking a court injunction to prevent Intel from selling the products related to the dispute.

**How broad are the implications of the settlement?** Not very. Analysts agree the settlement affects only Intel and its OEM customers. It won't directly affect competition or pricing in the marketplace.

**Does the settlement resolve whether Intel is a monopoly?** No. The FTC still calls Intel a monopolist, citing its 80% market share for general-purpose micro-

processors.

But Intel lawyers said Intel isn't a monopolist because it doesn't control processor pricing or exclude competition.

**Is Intel off the antitrust hook then?** No. Shortly after the settlement was announced, Motorola Inc. sued Intel on antitrust grounds. Intergraph has vowed to continue its suit against Intel, and the FTC is continuing to investigate Intel in other antitrust areas.

**So who won?** Because the settlement is so limited, analysts say Intel did.

But the FTC believes it won because the settlement resolves all the charges it brought last year.

— Matt Hamblen

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While **e-customers** present endless opportunity, they do pose some challenges. Managing relationships with customers, prospects and partners online is an enterprise-wide task. Systems performance and scalability needs are key. In short, it's got to be done right. Shrink-wrapped solutions will fall short. Experienced partners with customizable products and old-fashioned follow-through will succeed.

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## BRIEFS

## Microsoft Promotes Directory Exchange

Microsoft Corp. last week published the specifications for a Lightweight Directory Access Protocol-based control, called DirSync, that lets different directories such as Novell Inc.'s Novell Directory Services and Microsoft's upcoming Active Directory communicate with one another.

## SAP, Informix to Port R/3 to Linux

As expected, SAP AG and Informix Corp. have announced that they are working together to provide a version of SAP's R/3 enterprise resource planning software on Red Hat Software Inc.'s implementation of Linux, a Unix variant.

## J. D. Edwards Looks To Services Industry

J. D. Edwards & Co. in Denver is looking to extend supply-chain concepts and management capabilities to services industries with AIMx, a new data model and software framework that helps service companies manage employees, facilities and customers.

## Online Traders Suffer Access Delays Again

ETrade Group Inc. in Palo Alto, Calif., and Charles Schwab & Co. in San Francisco ran into Web site problems last Wednesday. ETrade suffered sporadic outages after the market opened; Schwab's Web site went down for 15 minutes at 10 a.m. because of a glitch in the site's user log-on software.

## Short Takes

SANTA CRUZ OPERATIONS INC. last week started shipping its UnixWare 7 Data Center edition for multiprocessor PCs, which is geared toward high-end enterprise users. ... LAWSON SOFTWARE INC. last week announced management changes aimed at increasing its overseas revenue share from its current 10% to 25% by the end of 2002.

## OUTSOURCING SERVICE COURTS INTRANET APPS

*UUnet provides management; users retain administrative control*

BY BOB WALLACE

**M**CI WORLDWIDE Inc.'s UUnet Internet division rolled out an outsourcing service for company networks last week that could relieve strain on information technology staff, cut costs and expand network reach around the globe.

UUnet's GroupHost for Domino would let users outsource their Lotus Development Corp. Domino-based intranets and extranets to the service provider's worldwide network. The service will manage data and applications, which are put on dedicated Compaq Computer Corp. servers in its network, and provide security features like

managed firewalls and authentication. Users, however, would retain administrative control of those servers.

Customers should also benefit from faster time to market and from around-the-clock server and traffic management provided by UUnet, company officials claim.

"This service will appeal to the middle market: companies with large business needs but limited IT staffs," said Greg Cline, a director at Summit Strategies in Boston. "UUnet is offering everything users need to comfortably move their Domino resources to a service provider."

One Domino user expressed cautious optimism about the service.

"The big question for us would be if they have enough network bandwidth to support us," said Jerry Rode, MIS direc-

tor at Saab Cars USA Inc. in Norcross, Ga. "If they had enough we'd certainly take a look at it." He noted that it wasn't long ago that many Internet providers had networks with limited capacity.

Price could be another consideration, Rode added. Because the luxury automaker couldn't find landlines cheap enough, it opted for a satellite-based extranet linking it to its dealers, he said.

Companies can access GroupHost for Domino using dial-up or frame-relay links as well as the Internet. The UUnet network can be reached by a local call in 114 countries. The company provides a dedicated account manager and help desk services as part of the offering.

To help companies retain administrative features, UUnet created a Web-based interface called AdminAdvantage. ▀

## Prioritizing Thin-Client Traffic

*Management software supports Citrix apps*

BY BOB WALLACE

Companies that use thin clients can now prioritize and guarantee precious wide-area network capacity for Citrix-based applications using new bandwidth management software from Packeteer Inc. in Cupertino, Calif.

This will be the first time users of Citrix Systems Inc. thin-client software will be able, for example, to ensure that mission-critical traffic from an SAP AG R/3 application gets first dibs on WAN bandwidth over lesser traffic like e-mail. The Citrix software lets thin clients run Windows NT-hosted programs.

The software runs on Packeteer's PacketShaper bandwidth management devices and lets users guarantee a set amount of WAN capacity by application. It generates reports that give response times that help determine actual performance.

"A lot of companies are looking seriously at Citrix because of the advantages of thin clients but couldn't control and prioritize [traffic]," said John McConnell, president of McConnell Associates, a consultancy in Boulder, Colo. Packeteer's new software provides those important capabilities, he said.

Although it's using only 40%

of the bandwidth on its 29-site, nationwide, frame-relay network, Summerville Healthcare Group plans to quickly install the new software to help it get a handle on anticipated growth.

"We plan to add 17 more sites in 35 to 45 days and also plan to run a key accounting application over the network," said Kathie Stockton, MIS director at Summerville in Alexandria, Va. "We definitely need it to prioritize that application over others as network traffic increases. We're worried about what running accounting over the network will do."

## Prioritizing

Stockton will give lower priorities for WAN bandwidth to its Microsoft Corp. Exchange e-mail and Office applications traffic, with Web surfing last on the list. "We've got some room to play now, but we're constantly growing," she said.

Users need only log in to the PacketShaper via a Web browser to set priorities and guarantee WAN bandwidth by application. The device applies the rules when traffic arrives.

The software is available now as a free upgrade for Packeteer customers with software maintenance contracts. PacketShapers range in price from \$4,000 to \$16,000. ▀

## FAQ: Apple Makes Part of Mac OS X Open Source

Last week, Apple Computer Inc. shipped its Mac OS X Server operating system and announced that it would make the core portion of that system — and the forthcoming Mac OS X client, due at year's end — available as open-source code. That will let anyone modify the source code as long as they share their modifications with all other developers, as is the case with the Linux variant of Unix.

## What exactly is Apple making open?

A group of technologies Apple calls Darwin, including the Mach kernel, the BSD Unix base operating system, the AppleTalk networking protocol stack, the Mac's disk volume formats (HFS and HFS+) and its NetInfo distributed directory system.

Mac OS X Server is a variant of Unix that can run Mac programs through an emulator program called the Blue Box. The Mac OS X client will integrate the Macintosh application programming interfaces and the Unix core more closely. Thus, its users won't need an emulator to run Macintosh software.

## What is Apple keeping propri-

etary? Apple won't make the source code available for any of the unique Macintosh interface or applications technology, known as Carbon, that people think of when they think of the Mac OS.

## How does Apple's open-source Unix base differ from other Unix variants like Linux or FreeBSD?

It doesn't, really. Ken Bereskin, Apple's Mac OS X Server product manager, said developers could cobble together a Mac OS X Server-like entity from already available, open-source versions of Mach and BSD Unix, but that wouldn't contain any of Apple's improvements or be able to run Mac OS X's Carbon or Mac software.

## What could I do with Darwin?

You could add or modify elements like network protocols or security protocols, or support other file systems. These modifications would work — if programmed correctly — even if you run Carbon on top. In other words, you could add these capabilities to the forthcoming Mac OS X client software, not just to the current, Unix-like Mac OS X Server.

— Galen Gruman



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## You'll be hearing from them on January 3, 2000.

If your Y2K remediation is complete, congratulations are in order. But there are still questions, especially in case of a lawsuit: has the work been independently verified? Can you prove due diligence? Have you made contingency plans for Y2K emergencies? Have you got business continuity plans in place? ADPAC has the tools and the training to make the answer to all those questions "yes".

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Continued from page 1

## BankBoston IT May Take Big Hit

between 1993 and 1996, a period that included its purchase of Shawmut Bank in 1995.

Analysts agreed that Fleet has a very aggressive track record with its acquisitions. "Their approach is straightforward — 'No democracy. This is the Fleet way, and you'll adopt it,'" said Bob Landry, an analyst at The Tower Group, a Needham, Mass.-based finan-

cial services consultancy.

Fleet executives haven't yet specified which departments will bear the brunt of the layoffs.

Fleet is expected to cut as many as 5,000 of the 60,000 jobs at the combined bank. A Fleet spokeswoman said the number of job cuts hasn't been determined yet.

But Landry pointed out that

Fleet "already has a fairly well-established [IT] group. They're the buyer, and BankBoston has a brand-new CIO" in former Sears, Roebuck and Co. technology chief Joseph Smialowski.

Smialowski, head of operations and technology at BankBoston, couldn't be reached for comment.

Zucchini said, "I will remain vice chairman and CTO. Joe will have a role in the new Fleet. We're working on determining what that will be."

### IT Challenges

The combined bank faces other IT-related challenges. Although both banks have successfully integrated smaller acquisitions in the past, including the then Bank of Boston's 1997 deal for BayBanks Inc., Fleet's \$16 billion bid for BankBoston is two to three times bigger than any of those deals. That "could potentially present [systems capacity] problems," Landry said.

For example, BankBoston

uses a proprietary deposit system, and Fleet runs a deposit system built by Islandia, N.Y.-based Computer Associates International Inc.

It's likely that neither has the capacity to fully absorb the other bank's customers, Landry added.

Possible BankBoston applications that Fleet will keep include the Internet-based, small-business system and the network of automated teller machines, which is newer than Fleet's, Marenzi said.

Most banking experts said the new Fleet will have to divest hundreds of branches and operations in the Boston area — up to \$13 billion in deposits, or roughly the size of BayBanks prior to the BankBoston consolidation — before regulators sign off on the deal.

That will require a great deal of systems and operational expertise, analysts said.

Zucchini disagreed. "If you look at the BankBoston IS issues, their international operations in Latin America is a big

### NO Y2K DELAY

Bob Landry and other banking experts said **year 2000** shouldn't delay systems consolidation between the two banks because they can't meld their computers until final regulatory approval has been given. That approval probably won't be granted until year's end, a BankBoston spokeswoman said.

part of the acquisition... which we'll leave intact [from a systems standpoint]. What's left over is the U.S. banking side [of BankBoston], which is not as large as other acquisitions we've done," he said. "After divestiture, if we're talking about absorbing between 200 to 300 branches, we've done that before."

"It's a huge divestiture, but it's a sensible transaction. They'll be able to squeeze a lot of costs out," said Tom Burnett, founder of Merger Insight, a New York-based firm that does institutional research on large corporate takeovers. ■



Fleet Financial CEO Terrence Murray (left) and BankBoston CEO Charles K. Gifford said they plan to run their respective bank systems in parallel until next spring to minimize any year 2000 disruptions

Continued from page 1

## Shop Floor is Intranet Challenge

time at a time when companies are trying to expand intranets into all-encompassing portal sites that give employees browser-based access to a wider range of business, operational and legacy information than ever before.

Enterprise portals are internal Web sites — often the start page for a company's intranet — that can provide single-point access to information that employees need.

### Where's the Data?

When trying to set up a portal, "the main problem is understanding where all this different information lives — knowing what departments have, where and how that relates to the way that people navigate through information," said Joshua Walker, an analyst at Forrester Research Inc. in Cambridge, Mass.

But getting at it can be a management and technology challenge. For instance, the format for data residing on core manufacturing and engineering systems like programmable logic controllers or pro-

prietary design workstations bear little resemblance to data on corporate networks.

"The traditional IT person doesn't understand the issues involved on the shop floor... and manufacturing operations don't always understand the business issues" driving such integration needed for portal sites, said Kevin Willey, a consultant at Perot Systems Corp. in Southfield, Mich.

For instance, much of the information gathered over factory floor automation networks comes from a range of proprietary devices such as programmable logic controllers and tools such as handheld scanners that are very different from standard PCs and servers.

Similarly, manufacturing networks and communication protocols — like the Fieldbus industrial networking standard — are based on different technologies compared with Ethernet and TCP/IP-based corporate networks.

As a result, pumping data from these systems into a standards-based corporate intranet is difficult, said Thomas R.

Schultz, a director of quality assurance at American Steel Foundries in Chicago.

"We still get into a lot of trouble with sharing [computer-aided design] files across the company" because of the proprietary file format associated with the company's computer-aided design software, he said. The company is trying to build an intranet site that will let engineers share design documents among remote sites, he added.

Similarly, the way the data is acquired, used and stored

### JUST THE FACTS

## Portals for the Factory Floor

How shop floor information in the intranet can help manufacturing operations:

- Allows remote monitoring and management of shop floors
- Allows access to manufacturing information from multiple sites
- Easy links to different process information sources

across systems also makes it hard to mold into standardized information formats.

"Manufacturing, by its very nature, is a highly customized

process," said Ram Koduri, a civil engineer at the Metropolitan Water Reclamation District of Greater Chicago.

### Ongoing Issues

Making shop floors part of a corporate intranet also means having to deal with different network maintenance and administration issues.

"It's like there is a completely different set of rules... Things that didn't matter previously come into play all of a sudden," said Eddie Prince, product business manager at Siemens Energy & Automation Inc., a maker of industrial automation systems in Norcross, Ga., which is in the process of putting information from its shop floors onto the intranet.

Issues such as having domain policies covering factory needs, developing standard software lists and deciding who has administrative control over manufacturing-floor information and policies become crucial, Prince said. For example, many shop floors let third-party vendors routinely access systems on the network for maintenance purposes, but that practice could pose security issues when manufacturing networks become part of a corporate intranet, he said. ■

## Electric Utility Debuts on Net

Site is first of its kind

BY JULIA KING

Utility.com, the first Internet-based electric utility, will debut this week in California.

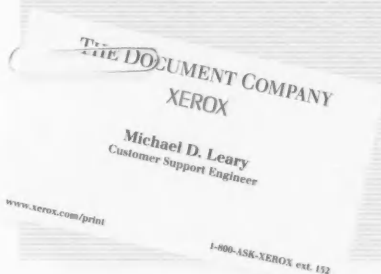
Unlike other electric utility Web sites, utility.com will be the first to go beyond providing rate data and other information and will let residential customers in deregulated markets sign up and buy electricity on the Web.

Once signed up, customers can access other Web-based capabilities including remote-control thermostats, electronic bill receipt and payment and, eventually, control of other home-based electronic devices like security systems.

Brick-and-mortar electric utilities have launched Web sites for customers, particularly in deregulated markets like California and Pennsylvania. But so far, none has been especially user-friendly, said Tom La Berge, a utilities market analyst at Meta Group Inc. in Stamford, Conn. ■

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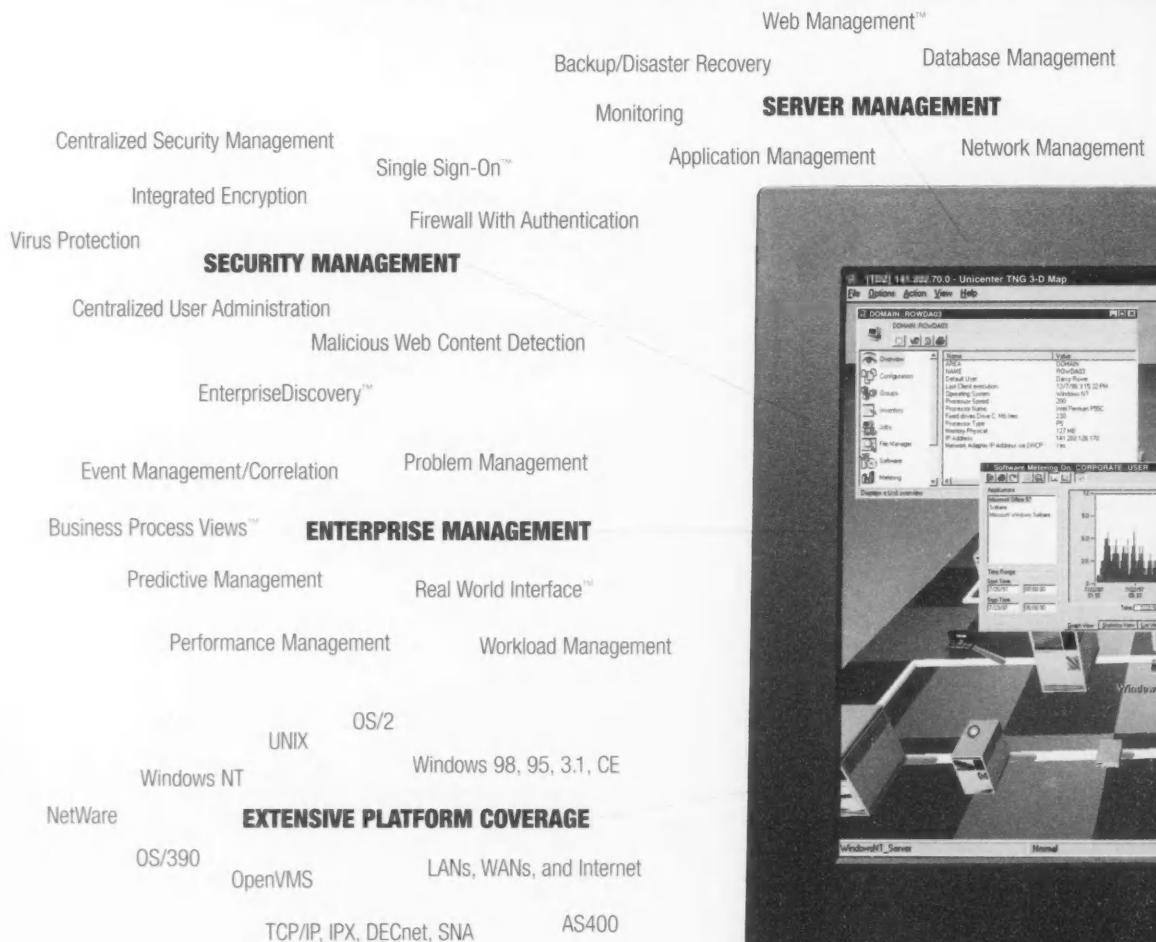
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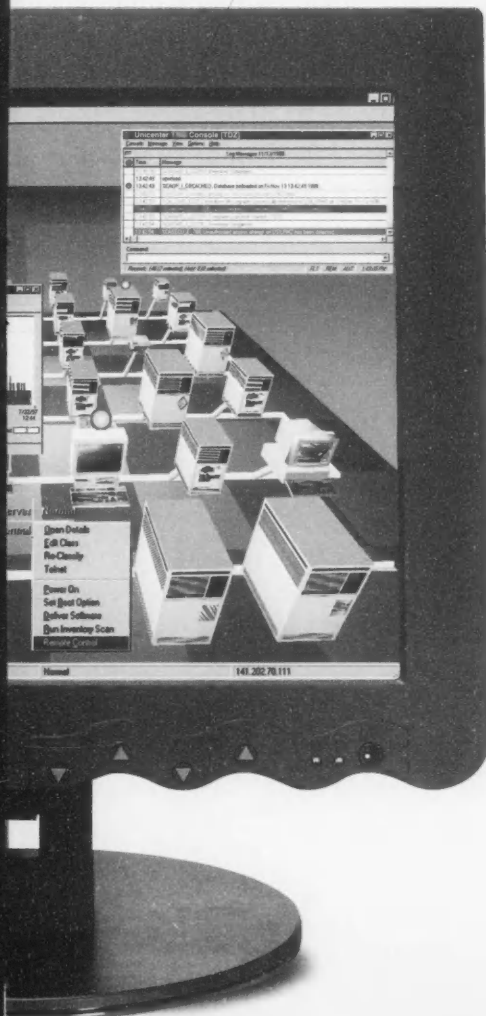
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# EXPLORER 5: A SOMEWHAT IMPROVED BROWSER

*Net-friendlier search engine comes with a sonic surprise: A radio*

BY RUSSELL KAY

**O**K, IT'S REALLY true. Microsoft Corp.'s Internet Explorer 5, the latest salvo in the browser wars, is a better product than its immediate predecessor, but not because of any single important advantage. Rather, the browser incorporates many small improvements that add up to a worthwhile upgrade for users, even though it may not appear that way to IT managers at first glance.

## Competitors Linger

Is Internet Explorer 5 also better than the current Netscape Navigator 4.08 or Communicator 4.5? In most ways, yes — as you would expect in this leapfrog competition. But Netscape Communications Corp. will introduce a new product in a few months.

Overall, Internet Explorer 5 offers a smaller package that will download and install

quicker. Previously viewed pages reload noticeably faster when you hit the "back" button, thanks to an improved caching scheme that saves page layouts as well as graphics and files written in HTML, the Internet programming language.

## PRODUCT REVIEW

### New Features

You can also now rearrange "favorites" into something other than alphabetical order.

The Web wouldn't be usable without search engines, and

Explorer 5's Search Assistant makes them easier than ever to use. Clicking on the "search" button opens up a left-hand frame for the search query and results. This pattern is familiar to Windows users and is the same treatment first given to the "favorites" and "history" buttons in Internet Explorer 4. When the search results come back, the first hit is also displayed in the main browser window.

That makes it faster and easier to determine whether a particular page is what you're looking for. If it's not, the search panel is right there, ready for you to click on another uniform resource locator. The Search Assistant can use multiple engines or be restricted to one of your choice.

There's one new, unexpected

feature that seems to come right out of left field. It's really very nice but could cause serious headaches in open-plan offices: Explorer 5 has a radio inside it.

Over the Internet, right from your browser without any additional effort, you can pick up hourly newscasts from National Public Radio, plus music and talk shows from a variety of radio stations around the world. The radio tool bar is hidden, by default, but it's there.

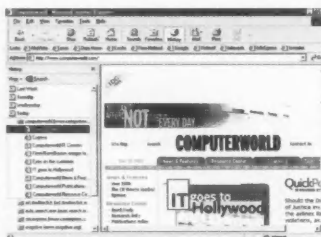
Fortunately for business

productivity, Explorer 5 also comes with the Internet Explorer Administration Kit, which allows the information technology administrator to establish a customized installation process, controlling which options are available to users. That means they can keep that radio from ever being turned on.

That degree of customization is possible because Explorer 5's code is more modular and componentized than ever.

Internet Explorer 5 is new, it's nice and it's neat. But while you may want it, you don't really need it.

For some, the sense of relief that statement brings may be its best feature. ■



INTERNET EXPLORER 5 offers many small improvements that make it a worthwhile upgrade

## Levi's IT To Play Key Role in Revamped Marketing Efforts

### Projects to help brand managers

When Levi Strauss & Co. announced last month it would close half of its North American manufacturing plants by 2004 because of eroding market share, industry-watchers said the company needed to revamp its marketing efforts to keep up with consumers' fast-changing fashion tastes.

Levi CIO Linda Glick says the San Francisco-based company has been doing just that during the past six months, with its information technology department taking a central role. Glick spoke with *Computerworld* senior editor Stacy Collett on two new efforts launched this month to help improve Levi's marketing.

heads] to understand what information they need to have for profit-and-loss accountability [for example]. That information manager understands those requirements and is part of their business team. We're in the process of training right now. Each global region, depending on business structure, will determine how many they need.

**Q: Are you deploying any information systems that aid marketing efforts?**

**A:** For consumers, we've got projects focusing on making a really exciting selling [Web] site. Internally, we're working on a brand-management system. On the supply-chain side, we're implementing forecasting and demand-planning applications.

**Q: Describe the brand-management system.**

**A:** We've just delivered the first phase of the system. It's [got] a whole Internet look and feel, but it comes off our intranet. The goal is, if you're a brand manager, what information do you need to be really accountable to your brand? We've got competitive information, financials, everything. In a way, it's their personalized portal. ■



**CIO LINDA GLICK:** Levi's is looking to its new information manager to lead IT, business strategies

## Microsoft Eyes Worker Policies

*Review could impact temps' class-action suit*

BY BARB COLE-GOMOLSKI

Recent comments from a Microsoft Corp. executive are fueling speculation that the company is about to overhaul its temporary worker policies, a move that could impact an ongoing legal dispute with long-term temps.

Earlier this month, Chris Williams, vice president of human resources, told a group of reporters that the company would be reviewing its contingent staff policies during the next month or two.

That's around the same time the company is expected back in court on a class-action suit brought by a group of temporary workers (CW, Jan. 18). At that time, the court is also ex-

pected to take up the plaintiffs' call for an injunction ordering Microsoft to stop excluding temporary workers from its employee stock purchase plan.

Since Williams' comments, rumors have been swirling among workers' groups in the Seattle area that Microsoft will convert some of its 5,000 temporary jobs into permanent positions or require temps to take long breaks — perhaps 180 days or more — after completing an assignment of one year or more at Microsoft. Currently, temporary workers have to leave for 31 days after the completion of a project that lasts a year or more. Microsoft acknowledged Williams' remarks but declined to comment on

any specific changes it might make to its staffing policies.

"The pressure is mounting on this issue, and it's hurting Microsoft's public image," said Stephen Strong, a partner at Bendich, Stobaugh and Strong, P.C., the lawyers for the plaintiffs in the lawsuit.

Microsoft is known for making some longtime employees rich via stock options, but it has also received attention for its treatment of temporary workers who don't receive the same benefits as Microsoft employees.

Marcus Courtney, an organizer and co-founder of the Washington Alliance of Technical Workers, a Seattle-based group that includes many current and former Microsoft permatemps, said Microsoft should convert the longtime temps into employees. "It's not just about reclassifying the job, but about reclassifying the workers," Courtney said. ■



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- Windows 98 operating system

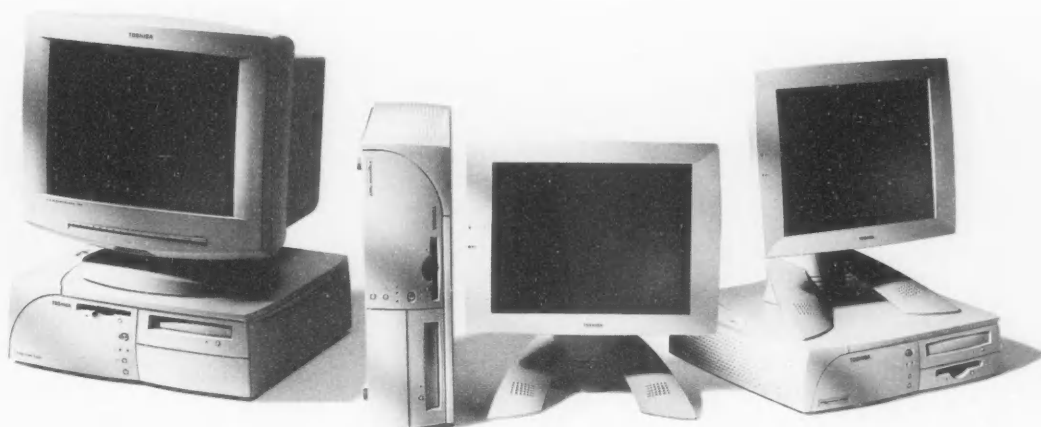
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# FEDS ASK FOR HELP FIGHTING CYBERCRIME

*Reno presents two plans to improve communication, cooperation on security*

BY PATRICK THIBODEAU  
WASHINGTON

**W**ARNING that the U.S. can't allow the Internet to become the new "Wild West," U.S. Attorney General Janet Reno last week announced plans to improve security by fostering cooperation between companies and federal agencies.

One solution involves creating a "Yellow Pages-like" directory of information technology companies and professionals that could be used by law enforcement agencies and companies when they need expertise. The listing, being developed with the Information Technology Association of America (ITAA) in Arlington Va., would be voluntary.

A second plan establishes a personnel exchange program aimed at helping government and private-sector IT professionals understand one another

er better. In this program, private-sector IT professionals would work with federal law enforcement agencies, and the government would send some of its "best and brightest" computer-savvy federal investigators to work in industry "to get an inside view of the various infrastructures," Reno said.

Paul Jansen, manager of information security at the USA Group Inc. in Indianapolis, said he sees some benefit to the Yellow Pages idea but added that the effort is focused on "high crimes and espionage" and not the "struggles that people are encountering with info security," such as the threat posed by disgruntled ex-employees.

Jansen also said it "would be pretty difficult" for most businesses to participate in the exchange program. "Obviously, we don't overstaff," he said. The 2,800-employee USA Group is a loan guarantor and administrator.

Reno isn't the only one seeking better communication and

dependencies," Charney said.

Another speaker, Stephen Katz, the chief information security officer at Citigroup Inc., said financial institutions are susceptible to security risks in large part because of their dependency on other industrial sectors such as telecommunications and utilities.

"If these other sectors don't get it absolutely right, we are absolutely gone," Katz said. "We need to work together to eliminate vulnerabilities." Infrastructure improvements, he said, can't be done "one company at a time."

Security awareness must improve, Katz said. "We're at the

**We need to  
work together  
to eliminate  
vulnerabilities.**

STEPHEN KATZ,  
CITIGROUP

Industry Technology Secretariat Forum in Washington.

For instance, a teen-ager who hacked a telecommunications switch in 1997 killed the runway lights at an airport in Worcester, Mass.

"We've created a lot of inter-

## CFOs Bracing for Lawsuits, Stock Market Jitters in 2000

BY THOMAS HOFFMAN  
SCOTTSDALE, ARIZ.

The question, which came from the back of a conference room at a posh desert resort, reverberates through corporate boardrooms: Even if our company suffers no significant breakdowns at the beginning of next year, how can we defend ourselves against shareholder lawsuits if year 2000 problems throughout U.S. business sectors lead to a 20% drop in the stock market?

"There aren't any easy answers," said Claude M. Stern, a partner at Fenwick & West LLP, a Palo Alto, Calif.,

law firm, who fielded the question at a recent *Business Week* conference. The good news: It's "extremely difficult" to assign and prove blame for any failures, he said.

Most economists say international supply-chain disruptions and pockets of domestic glitches won't rattle the markets. One exception: Edward Yardeni, chief economist at Deutsche Bank Securities Inc. in New York, has said there's a 70% chance that year 2000 will lead to a global recession.

"I don't see a stock market crash at all," said Roger E. Brin-

same place today looking at cyberthreats as we were five years ago looking at Y2K," he said. He suggested stepping up coordination and cooperation with federal agencies.

ITAA President Harris Miller said the "expanding connectivity is widening the scope and usage and vulnerabilities of [IT] systems." Reno's proposals offer "new modes of collaboration and points of departure," he said.

Federal investigators said they need private-sector IT expertise.

"We can't be an expert on every system, so we rely on the system administrator to help us get the information we need," said Michael Vatis, a deputy assistant director at the FBI and head of the National Infrastructure Protection Center. "We have to work hand-in-hand." ■

## Is It 2000 Yet? Executives Want Staff Back

*Also at issue: Links to overseas suppliers*

BY THOMAS HOFFMAN  
SCOTTSDALE, ARIZ.

Pay heed, year 2000 managers. Chief financial officers want to know two things: Will international suppliers be ready? And when will staff be freed up to work on other projects?

"I'm satisfied with how IS is managing Y2K, but you get to a point where so many resources are being drawn to it that you want to say, 'Enough already—let's get on with the business,'" said Robert A. Neal, business development director at Newcourt Credit Group in Brookfield, Conn. Neal was one of 250 finance executives at a recent *Business Week* confer-

ence. Thomas J. Volpe, the chief financial officer at The Interpublic Group of Companies Inc. in New York, said he will review a report this week detailing the profit hit the advertising giant could face if key suppliers and business partners don't meet their millennium deadlines. Interpublic has identified 15 countries that are in poor shape, including Venezuela, Argentina and several Far East nations.

"We've developed regional SWAT teams [of technologists] to address localized problems," Volpe said. The company is also building up its inventory of supplies, and plans to hire a security firm to protect international facilities "in case of civil unrest," Volpe said.

Meanwhile, Woodcliff Lake, N.J.-based Ingersoll-Rand Co.

is meeting with its top U.S. suppliers to try "to help them understand what they need to do [to be year 2000-ready] and how we can help them," said James E. Perrella, chairman, president and CEO of the manufacturing conglomerate.

But as for international suppliers, he said, "We may have to replace some of those companies, and that's a big concern for us. We just don't know what's going to happen."

Volpe—who has seen his company's year 2000 costs rise from an estimated \$9 million last year to a target of \$57 million—said there's an upside. Investments, such as a PeopleSoft Inc. payroll system Interpublic is installing, should "benefit the total enterprise" and can be amortized over the next three years, Volpe said. ■

ner, chief economist at The Parthenon Group in Boston. And David Hale, chief economist at The Zurich Group in Chicago, said year 2000 problems will disrupt U.S. businesses but "will boost output" in the short term.

### Can't Help But Worry

Nevertheless, executives are worried. "Even if our company is operationally sound, how do you avoid [lawsuits]," asked Bill Priessmeyer, chief financial officer at Jostens Inc., a Minneapolis-based marketer of yearbooks and class rings.

"We're just going flat-out to make sure we can operate," said Thomas J. Volpe, the chief financial officer at The Interpublic Group of Companies Inc. in New York. The steps Interpublic is taking include leasing fully equipped office space on the outskirts of cities around the world in case of urban power grid failures.

Others believe year 2000-related lawsuits are unavoidable. "Everyone is suing everyone else over this—what are you going to do?" said Ronald A. Plomgren, chief financial officer at Longs Drug Stores Corp. in Walnut Creek, Calif. ■

**Y2K**



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TECHNOLOGY

## Oracle to Tailor Web Access to Handhelds

BY STEWART DECK

Oracle Corp. has started to preview a server technology for mobile devices, called Proj-

ect Panama, that delivers dynamic Web content to handhelds, Windows CE-based devices and smart phones.

Project Panama, due the second half of this year, is slated to include the Oracle8i database and the company's Application

Server software for Unix or Windows NT computers. It acts as a gateway between the mobile user and the Web, a database or other data the user is retrieving.

Analysts said the technology, which was designed to

store mobile users' profiles within the Oracle8i database, could be useful to Internet service providers and Web-site operators that want to optimize viewing of their services for a user's specific device.

That approach differs from other handheld, Web-access schemes in that it was designed to provide dynamic access instead of mobile synchronization of static data, said Carl Olofson, an analyst at International Data Corp. in Framingham, Mass.

"It will take some work to set up" the structure of Web pages, Olofson said, "but once it's set up, it should run without having to recode the site for each individual device." ▀

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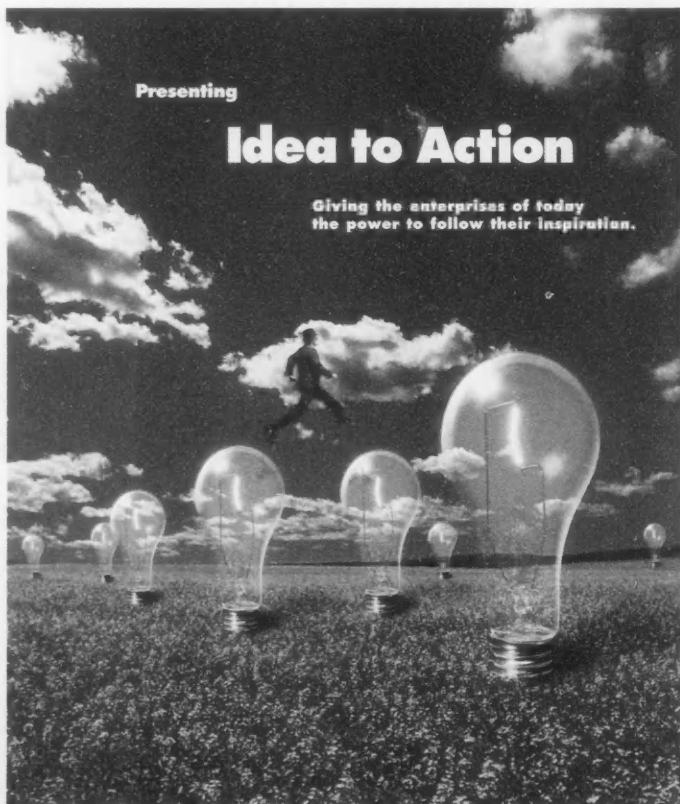
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## HP to Unveil One Mailbox For Voice, Data

BY BOB WALLACE

Hewlett-Packard Co. last week announced two products: One that lets users check a single mailbox for e-mail, voice mail and faxes, and a second that integrates voice and data in one server.

The products, due at mid-year, use Nortel Networks voice components that support telephony features. The components, built in to Microsoft Corp. NT servers with Intel Corp. processors, will be sold by a new HP telecommunications products unit.

Though Lucent Technologies Inc. already has an integrated messaging offering, "Nortel is the first company with any depth in the voice world to step up to the plate and deliver a strategy and products for converged networks," said John Armstrong, an analyst at Dataquest in San Jose, Calif.

HP's single mailbox product, Business Messaging Server, provides phone or PC access to e-mail from Microsoft Exchange and Lotus Notes, along with voice mail from phone systems and faxes. It doesn't replace messaging systems.

HP's Business Communications Server, an 80-user telephone system that can be attached to LANs, is equipped with WAN interfaces. Pricing wasn't disclosed. ▀

# LINUX FANS FEAR RED HAT TAKEOVER

Vendor says it supports standards base but wants to maintain market share

BY DAVID ORENSTEIN

**T**O SOME in the Linux community, Red Hat Software Inc. seems to want to hijack the free Unix variant. But in interviews with *Computerworld*, Red Hat President Matthew Szulik endorsed the Linux Standards Base (LSB), the official Linux standards group.

And Erik Troan, director of development at Red Hat, said, "We're very supportive of what the Linux Standards Base is doing. . . . Their emphasis on making applications portable is in the best interests of everybody."

But Szulik also said standards groups often slow down the pace of innovation. And other Red Hat officials in recent weeks have referred to standards groups as "overhead."

Szulik also said Red Hat, based in Research Triangle Park, N.C., wouldn't want to see the LSB be used by other Linux vendors with less market share to catch up to Red Hat. (The LSB, based in Santa Clara, Calif., seeks to ensure that different commercial versions of Linux, called distributions, are just similar enough to run the same applications written for Linux.)

Daniel Quinlan, chairman of the LSB's steering committee, said he believes Red Hat fully supports the effort.

But only a few weeks ago he wasn't sure how Red Hat felt. "Earlier this month I think it was fair to say there were mixed signals coming from Red Hat," Quinlan said.

Even with recent pro-LSB statements from Red Hat, the company's zeal to sign development partnerships with ma-

## Linux Lineup

Members of the Linux Standards Base include:

- Caldera Inc.
- The Debian Project
- Dell Computer GmbH
- Pacific HiTech Inc.
- Red Hat Software Inc.
- SuSE GmbH
- WGS Inc.
- Enhanced Software Technologies Inc.
- Melro Link Inc.
- Software in the Public Interest
- Linux Hardware Solutions
- VA Research Inc.

jor hardware and software vendors such as Computer Associates International Inc. and IBM — combined with its mixed signals about standards — has prompted continued questioning of Red Hat's

aims by some observers.

Red Hat's business model depends on service and support revenue, noted Stacy Quandt, an analyst at Giga Information Group Inc. in Cambridge, Mass.

The company thus may want to differentiate its version of Linux so it can maintain that revenue stream, she said. But that could lead to fragmentation, Quandt said, unless Red Hat supports the LSB. "It's not good for Linux overall if they don't do that," she said.

Red Hat may be trying to become perceived as the de facto owner of Linux, said Arthur E. Tyde III, CEO of the Linux support company LinuxCare Inc. in San Francisco. "This is a perception game, not a reality game. If you own the market, you own the standards," he said.

Steve Kleynhans, an analyst at Meta Group Inc. in Stamford, Conn., said Red Hat may end up treating Linux standards the way Microsoft Corp. has treated standards such as the Web programming language, HTML: by embracing them, extending them and steering them to match the company's strategy. Red Hat does realize that Linux will fail if it fragments, he said. ■

## BRIEFS

### Global IP Network Formed with Merger

Global Crossing Ltd. in Britain and Frontier Corp. in the U.S. last week announced that they plan to merge. The \$11.2 billion deal will create a global IP-based network offering Internet, data, long-distance, local-telephone and conferencing services. Together, the companies will serve 159 cities in 20 countries.

### Corel Forecasts Loss

Business and graphics software vendor Corel Corp. in Ottawa said it expects to post a loss of \$5.1 million (U.S.) for the first quarter of fiscal 1999 on revenue of \$40.3 million. The company said in January that it expected poor first-quarter results, partly because sales have declined for two of its main programs, WordPerfect Office and CorelDraw, in anticipation of new versions this April.

### Disney Web Network Inks Credit-Card Deal

MBNA America Bank NA in Wilmington, Del., the nation's second-largest credit-card issuer, has inked a deal with Burbank, Calif.-based The Walt Disney Co.'s Go Network worth up to \$100 million over five years. MBNA will offer several credit cards on Go Network sites such as Go.com, Infoseek.com, ABCNews.com, ESPN.com and NFL.com. MBNA will also buy \$85 million in advertising from Infoseek.

## Short Takes

AMERICA ONLINE INC. last week completed its purchase of NETSCAPE COMMUNICATIONS CORP. for \$4.2 billion in stock. . . . BRIGADE SOLUTIONS INC., a provider of Web-based customer support services, received a \$3.5 million venture-capital investment. . . . INFORMATION ADVANTAGE INC., a provider of Web-based intelligence software, reported revenue of \$70.7 million for the fiscal year, up 41%. . . . ITXC CORP., a carrier of Internet telephony, got a \$15 million second round of venture capital financing.

# 3Com Takes Plunge Into Storage Networking

Others may follow as net growth slows

BY NANCY DILLON

Last week, a \$5 billion Ethernet gorilla went from dipping a toe into the nascent \$2.4 billion storage networking market to diving in head first. Some industry watchers say other major networking vendors may be ready to follow suit.

Santa Clara, Calif.-based 3Com Corp. announced a cross-certification and technology development alliance with Louisville, Colo.-based Storage Technology Corp., the leading high-end tape storage vendor.

Last November, 3Com announced its entry into the storage-area networking (SAN) market along with three other formidable SAN allies: Data General Corp., Legato Systems

Inc. and MTI Technology Corp.

Analysts said 3Com's presence has the potential to significantly alter the SAN landscape. 3Com's worldwide distribution and services organization, testing expertise and brand name could help catapult storage networking to mainstream adoption. It could also drive other large networking vendors to the SAN space and spark a string of technology — or even company — ac-

quisitions. "What's happening is that networking companies are starting to get a bit squeezed" as growth in networking spending has dropped to 10% from 15% to 20% in recent years, said Paul Sagawa, an analyst at Sanford C. Bernstein & Co. in New York.

It's still too early for existing Fibre Channel connectivity vendors to worry, said Tom Lahive, a former Dataquest analyst now at vendor Storage Networks Inc. in Wellesley Hills, Mass. He said those players can still attain lucrative partnerships with key systems vendors such as IBM, Sun Microsystems Inc. and Compaq Computer Corp.

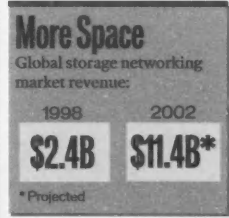
Plus, "it would be a political error for [3Com] to shut anybody out," said Nick Allen, an analyst at Gartner Group Inc. in Stamford, Conn. "There are so many pieces to the [SAN] puzzle and so much intellectu-

al property already there," newcomers have to capitalize on as much of the work that preceded them as possible, he said.

"3Com has typically been a very strong adherent to standardized technology," Sagawa said. Cisco Systems Inc. "is the one that's tried to create more proprietary solutions to lock in customers. . . . I think if Cisco were to move in the same direction, it would present more of a threat."

Cisco hasn't announced any formal plans to enter the storage networking market, but it has joined the Storage Networking Industry Association. "Now they're watching the market closely, as opposed to just watching," Allen said.

Cabletron Systems Inc. "would likely be more aggressive than Cisco" at following 3Com into the SAN market, said Christin Armacost, an analyst at Everen Securities Inc. in Chicago. "It's more Cisco's style to take a wait-and-see approach." ■





PAUL GILLIN

# Linux reality check

**F**OR A GROUP that prides itself on individualism, computer vendors sure are prone to a herd mentality at times. The latest stampede is toward Linux, the operating system that's freely available on the Internet. In recent months, just about every computer and software company of any consequence — except Microsoft — has announced support for Linux. That, combined with Microsoft's pathetic showing at its antitrust trial, has

prompted some people to forecast that Linux will be Microsoft's downfall.

Well, don't hold your breath. Yes, Linux is an exciting phenomenon. But its momentum in the vendor world still has lots to do with self-interest and little to do with customer demand.

Vendors are rushing to Linux today for two big reasons: 1) everyone else is doing it; and 2) Linux doesn't come from Microsoft. Neither of these motivations is a leading indicator of success. Vendors have always been quick to pile on to big-idea concepts: client/server, Java, push technology and network computers are recent examples. But early euphoria often wanes when the technology doesn't prove to be the panacea expected. A revenge effect follows, and the technology becomes vilified — often unfairly — for not delivering on inflated expectations. Linux will go through that stage.



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But it's the anti-Microsoft argument that rings most hollow. While the existence of Microsoft alternatives is terribly important to many vendors, there's no indication that users care all that much. In fact, one of Linux's biggest shortcomings at the moment is that it isn't backed by the kind of training, support and third-party software market that Microsoft brings to the table.

Linux's real impact has been to validate the open-source model, a

trend further advanced last week by Apple's bold move to publish the source code to some of its server software. But I have yet to see research that establishes that corporate users are clamoring for Linux. If that enthusiasm doesn't emerge, Linux will flame out faster than you can say "network computer."

Celebrate Linux for the energy and creativity it has brought to the industry. But be realistic about its potential. ▀

WILLIAM ULRICH

# Time to separate year 2000 fact from fiction

**I**'VE BEEN HEARING good news on year 2000 lately. The congressional Office of Management and Budget will report this month that 96% of key federal systems requiring repair have been fixed and are being tested. The state of California reported earlier this year that more than 75% of its critical systems were year 2000-compliant.

The telecommunications industry, according to a recent U.S. Senate report, will have 99% of its access lines in compliance by this fall. Other sectors, including the utility industry, are also sending optimistic signals.

But before you stand up and cheer, consider the sources of all this news.

The federal government lets agencies rate themselves on year 2000 compliance. Last year, many agencies received poor marks. Now those same agencies are receiving "A" and "B" grades. For example, the Department of Energy went from an "F" to "B" in a three-month span. Bob Alloway, who designed the federal grading system, said it did this by declaring previously important systems to be non-mission-critical.

The Internal Revenue Service has admitted flaws in its reporting process. Director James White was quoted as saying that the "IRS does not monitor year 2000 status of its mission-critical systems in their entirety."

California was celebrating its year 2000 successes when the state auditor found two-thirds of its mission-critical systems to be noncompliant.

The telecommunications industry said phones should work in the year 2000. Yet Fortune 500 telecommunications providers had spent only 33% of their year 2000 budgets as of Oct. 1, 1998. AT&T increased its budget from \$463 million to \$711 million with less than a year and a half to go.

I would say that much more work must be done before victory can be declared.

Confidence in the utility industry was growing until recent plans surrounding the year 2000 drill to take place April 9 were uncovered on the North American Electric Reliability Council's (NERC) Web site. The guidelines tell companies to "not make the drill too complex" because NERC wants "to have a successful and meaningful story for publication."



WILLIAM ULRICH is president of Tactical Strategy Group Inc. and executive vice president of Triaxis Research LLP. Contact him at [will@traxis.com](mailto:will@traxis.com).



Self-reporting and rigged testing are self-serving devices aimed at keeping regulators, customers and constituents in a peaceful state of denial. I strongly suggest that you don't bet your company on these placating statements.

Companies should commission independent reviews to distinguish year 2000 facts from year 2000 fiction.

Third-party assessments should focus on the processes used to fix and test systems and the results of those projects. Management should also commission a review of contingency plans and legal strategies.

Self-reviews aren't worth the paper they're written on. You should remember that it's true for you — and for every one of your mission-critical suppliers. ■

DAVID MOSCHELLA

## Microsoft, Intel cases show decline of monopolies

INTEL'S WISE DECISION to settle the Federal Trade Commission's antitrust administrative complaint should remind us all of a very simple reality. It's the law of this nation that business competition isn't simply a matter of the survival of the fittest and that our capitalist system isn't merely a bloodless form of warfare. In those rare cases when one company's market power reaches a certain threshold, ameliorating forces kick in and different rules start to apply.



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Whether one agrees with this system or not is really beside the point. Certainly, Intel's management would prefer to be treated just like any other company. But, as with IBM and AT&T before it, Intel was wise enough to recognize that even the richest companies can't write all the rules all the time. Intel was also savvy enough to know that the best time to settle any case is before it starts — before the blood

turns bad, before the lawyers dig in their heels and before either side gets the taste of victory.

However, as we have seen in the Paula Jones lawsuit against President Bill Clinton, it's never too late to settle. And during the current break in the Justice Department vs. Microsoft trial, both sides should be doing some serious soul-searching. Fundamentally, it's also in everyone's interest to settle that case as well.

Although individual DOJ careers would benefit from a final judgment against Microsoft, government interests lie elsewhere: Nothing would do more to enhance the image of U.S. antitrust enforcement than a prompt settlement that was well-received by both the marketplace and the media.

For Microsoft, the incentives are even greater.

The reputation of the company and many of its top executives has already been badly tarnished, and now the unavoidable comparisons with Intel have only made things worse.

Whatever hope Microsoft once had of demonstrating that meddlesome bureaucrats couldn't possibly understand the fast-moving software industry has been largely lost. Most important, the odds of outright victory seem to be steadily slipping, making a lengthy and debilitating appeals process increasingly likely.

Discussion of the possible settlement terms might become more tangible once the details of the Intel resolution become public.

But as I have written about in this space on several occasions, there are any number of ways that Microsoft's most predatory practices can be curbed without seriously diminishing its freedom to innovate [CW, Dec. 1, 1997; May 18, 1998; Dec. 14, 1998; and Jan. 18, 1999 — all are

available at [www.computerworld.com](http://www.computerworld.com)].

Those who argue that the government has set a dangerous precedent by taking on the industry's two most successful companies are missing the following key points:

■ First, the precedent has been set many times, in our industry and others.

■ Second, and more important, monopoly power in the computer business is actually on its way out.

Clearly, Microsoft, Intel and Cisco exert tremendous influence over many parts of today's IT industry. But people often forget that, in the 1960s and '70s, IBM's power alone was far greater, extending across virtually the entire IT industry value chain.

Assuming a future of much more diverse product platforms, greater system interoperability and ever-increasing telecom competition, we can expect less monopoly power, not more.

What are the odds that a Yahoo or an America Online will be able to wield monopoly power over the Web? My guess is that historians will look back and see that government efforts to reign in Microsoft and Intel weren't the beginning of heightened antitrust enforcement in the IT industry.

They're more like the end. ■

## READERS' LETTERS

### Pentium IDs: Friend, foe or nonissue?

I FOUND Maryfran Johnson's editorial "Big Brother Brouha" [CW, Feb. 1] offensive, shallow and a bit frightening.

Offensive because "privacy" is part of a bundle called "civil liberties." From the earliest days of this republic, civil liberties have tended to be an afterthought.

Shallow because Johnson is ready to leave the invasion of privacy as a programmer-activated option in order to go shopping. Frightening because our government is already rife with people whose one driving concern is control. We need an anonymous venue available to voice legitimate concerns and criticisms.

Business on the Internet can be protected without Intel's ID stamp on everyone's PC. If it isn't removed, I will look

to one of Intel's competitors when I assemble my next computer.

John Pittaway  
Santa Ana, Calif.  
[jpittawa@idt.net](mailto:jpittawa@idt.net)

I NEVER really thought about the "chip serial number" dispute with Pentium III's until Maryfran Johnson's editorial. This is because the machines I work on — Sun SPARC and SPARC Ultras — have individual host IDs. As the [manual page] for the host ID reads: "This number is usually taken from the CPU board's ID PROM." In other words, it's not a privacy issue for workstations to have IDs, but it is for PCs? Does this make more sense to you than to me?

Fred Geisler  
FAME Information Services  
Ann Arbor, Mich.  
[fxg@fame.com](mailto:fxg@fame.com)

I AGREE with Maryfran Johnson and would like to add that the Pentium III feature

would help in other ways. Parents could use it to prevent children from accessing certain sites. And hackers would find it harder to cover their tracks.

I saw on a recent TV news program how a man created ads and a site with sexually explicit content using someone else's identity. The Pentium III feature would have helped police track and apprehend him faster.

So there are other advantages besides business ones.

Josue Rivas  
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any reference to the late Dr. John Vincent Atanasoff and his graduate student Clifford Berry at Iowa State. They created the ABC (Atanasoff-Berry Computer) in 1939 and a working prototype in 1942. In 1973, District Judge Earl H. Larson in Minneapolis ruled that most of the ideas in the ENIAC, built by John Mauchly and J. Presper Eckert, were contained in the ABC. The ENIAC patents were declared invalid.

Boulton B. Miller, Ph.D.  
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COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: [letters@computerworld.com](mailto:letters@computerworld.com). Include an address and phone number for immediate verification.

### Give real computer pioneers their due

AS AN old-timer in the computer area, I'd like to set the record straight. You failed to acknowledge in your Jan. 11 article "Genesis of the Computer"

ANDREW BORTS

## Gazing at new hardware? Time to take a step back

**S**O YOU'VE DECIDED to dump your "old" system. You've gone and hired a consultant equipped with gold cuff links and a full set of titanium golf clubs, which he uses to lose against the CEO of your company. Because he's never seen a computer the color of the one your company has, it's obviously time for another one. So the CEO calls the IT director into his office. "We need to modernize our outdated computer equipment," he says.

"Sir, what will we do with the staff of 20 programmers we have that maintain the current system?" the IT director asks.



ANDREW BORTS is a consultant in South Florida. Contact him at [andrewb@syact.com](mailto:andrewb@syact.com).

"Why, we'll retrain them! It shouldn't be that hard." Now the golf-playing consultant brings in a staff of programmers because the learning curve was too much for the current depressed and fleeing staff, and the project begins.

After a certain point, people stop asking how long the project is going to take because it's more important to get off the "offending" equipment. The original estimate starts to grow and grow, and eventually, you ask what was wrong with the equipment you had to begin with. Sure, there were bugs in the software, but they could have been fixed, and enhancements could have modernized the software. The users didn't request it until Mr. Cufflinks showed them something new.

The users start to wonder about the new system, while the current system is taking care of company business. One user asks, "Will the new system print this report?" And the answer comes, "That report? Why does it need to print that report?"

The programming staff, being prevented from doing new development on the old system, spends its time fixing bugs. The old system starts to shape up like never before, but the staff isn't a happy bunch right now. With diminishing staff, the project completion of the "new" system starts to look like it may take even longer than anticipated.

After all, the old system took 15 years of development to do as much as it does, so the new system must do at least what the old one did.

Why not modernize the software — instead of the hardware — and avoid this whole mess?

Unless a complete software solution exists for the way your company does business, a development project such as the above example could cost as much as \$1 million.

Modernizing an existing package, however, could be as simple as reorganizing the current system, expanding its capability, eliminating software bugs, implementing a user wish list and placing a graphical user interface onto the final product.

Companies still look at hardware as the most important part of a technology decision, but that's not where the real dollars are spent. When mainframes cost millions of dollars and took up huge warehouses, people acted differently.

Now, the hardware cost is practically insignificant, so the temptation to change platforms is stronger.

When I muse about getting a hot new model of car, my father and uncle say, "The old one still runs, right?" I tell them, "I must get rid of it!" just like my CEO counterparts say. But my relatives remind me that with a paint job, routine maintenance and better care, I can get many more years out of my current car. Rattles and shakes are just indications of necessary minor maintenance, nothing more. Add storage, get faster processors as needed — that's all fine. But why change the whole platform?

Admire the new models. Take a few for a test drive. Just appreciate what you're driving now. And know when what you really want is a new toy, rather than a truly necessary change in your systems. ▀

GOPAL K. KAPUR

## Bad management is to blame for IT skills crunch

**F**IRST THEY told us the Earth was flat. Now they're telling us there's a shortage of IT professionals that numbers 346,000. The fact is, it's not IT professionals we lack, it's professionally run IT projects. According to *The Wall Street Journal*, 42% of all technology projects launched in the U.S. are abandoned before completion. With more than \$250 billion spent on IT every year, that means \$105 billion goes down the drain.

With personnel accounting for 50% of IT budgets, and at an average cost of \$100,000 per

employee per year, it doesn't take a rocket scientist to see that more than 525,000 IT professionals are wasted annually.

Bad IT management is the basic problem, and four management errors stand out as major reasons for our project failures:

**Failure to filter out half-baked ideas.** This happens when the project manager is too intimidated to question the idea person — usually a senior business executive.

Asking questions such as "What is the reason behind this request?" "Which strategy is the project linked to?" "What are the implications of doing nothing?" and "Under what conditions should the project be shut down?" will weed out a minimum of 5% of half-baked ideas.

**Estimate-to-please.** More than half of all completed IT projects exceed their original cost and/or duration estimates by 150% or more, for two reasons: First, most IT professionals haven't been trained in the art and science of developing realistic estimates.

Second, most sponsors like to dictate unrealistic budgets and deadlines. Even when a project manager knows that the proposed budget or deadline is unrealistic, he keeps mum because doing otherwise invariably means losing the assignment.

Realistic estimates and true sponsor-to-project-manager negotiations eliminate at least 10% of the proposed projects.

**Lack of solid sponsorship.** A committed, strong sponsor is the single most influential ingredient for project success.

A sponsor's responsibilities include championing the project team, ensuring sustained buy-in, resolving major policy issues, removing high hurdles and ensuring that the promised resources are available.

The Center for Project Management's recent survey of senior IT managers revealed that, ironically, only 17% of the projects receive solid sponsorship. Business sponsors must take their responsibilities seriously and commit time and effort to project success.

Committed business sponsorship is sure to reduce the rate of project failure by at least 10%.

**Failure to monitor a project's vital signs.** Imagine a hospital where nurses and doctors don't routinely monitor patients' vital signs — the mortality rate is sure to soar. How many IT organizations have defined a set of vital signs that project managers monitor diligently?

I recommend a set of nine vital signs, the top four being the status of the critical path, the deliverable hit rate, planned resources vs. actual resources and the general disposition of the project team. Diligent monitoring of well-defined vital signs will reduce the project failure rate by an additional 10%.

So you do the math. Steps 1 and 2 will stop at least 15% of ill-fated projects from being launched, and steps 3 and 4 will prevent at least 20% of launched projects from failure.

This will save the IT profession \$87 billion annually — a saving of 437,000 IT positions, or 91,000 more than the alleged shortage. ▀



GOPAL K. KAPUR is president of the Center for Project Management in Palm Desert, Calif. Contact him at [gkapur@center4pm.com](mailto:gkapur@center4pm.com).



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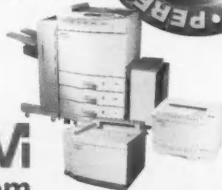
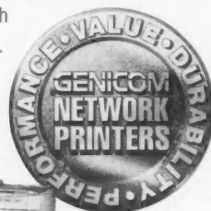
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# BUSINESS

## BETTER BUDGET APPROACH

Drug giant Eli Lilly has seen its unit costs for computers decrease about 7% per year with a per-unit pricing scheme. Business managers like seeing how much each unit costs. IT likes less-contentious budget meetings. **▶ 36**

## SMALL FIRMS UNDER Y2K GUN

The Senate plans to offer cash for small businesses that need to get their year 2000 houses in order. Corporations lament that it may be too late for many. **▶ 41**

## SITES TARGET AVERAGE JOE

As less-techno-savvy users increasingly go online, companies strive to make their Web sites less complicated. The move into the mainstream means new niches for sales, too. **▶ 40**

## CLOSE TO THE CUSTOMER

Sales automation projects don't work if salespeople don't use the software. But some, like financial services firm Northern Trust, want help staying close to the customer and find these tools useful. **▶ 42**

## HIRING IN THE ELECTRONIC AGE

Electronic résumés may seduce some job candidates into stretching their credentials, but

many hiring managers still prefer them because they demonstrate some technical know-how. **▶ 44** Of course, that flood of electronic résumés needs managing. A database can help. **▶ 36**

## SILICON GULCH OR BIOTECH BEACH?

Where will your next job be? Silicon Valley? How about in any of the more than 50 "Silicon," "Digital" and "Cyber" locales? Some are burgeoning areas for innovation. But some are little more than an office park. **▶ 50**

## TIME TO DITCH DILBERT

Quit your kvetchin' and look on the bright side for once, writes Jim Champy. The father of re-engineering says Dilbert's pessimism has run its course. Perk up and get going, he says. **▶ 46**

## READ ME WHILE YOU WAIT

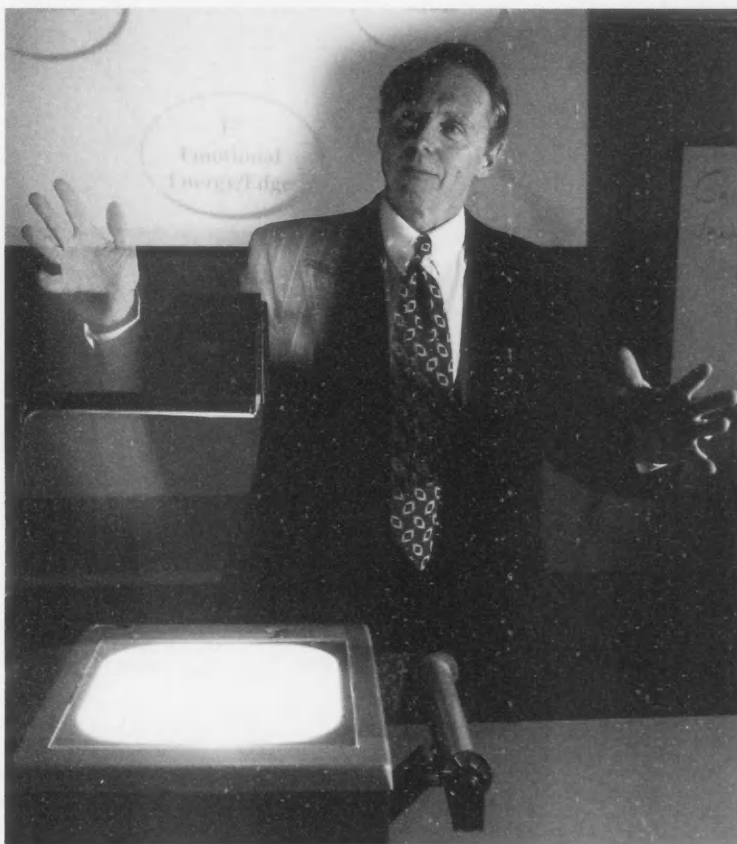
Wells Fargo sells ads that tap a captive audience: people waiting for cash to spill out of the teller machine. **▶ 40**

## TIPS FOR OUTSOURCING

Keep your outsourcer on his toes even after you've signed a deal, experts advise. And pick metrics that won't drown you in paperwork. **▶ 36**

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## MAKING REAL IT LEADERS

WHAT DOES IT TAKE to develop information technology leaders today? Author and leadership expert Noel M. Tichy (above) exchanges views on the subject with three IT executives — Galen Briggs, Darwin John and Peter Leblanc — who are committed to leadership development.

# 54

# IT BUDGET TACTIC ADDS EFFICIENCY

Eli Lilly achieves economies after switching to per-unit pricing

**S**INCE ELI LILLY & CO. switched to per-unit budgeting for its information technology infrastructure two years ago, the company has seen unit costs drop an average of 7% per year, said Edward Tunstall, Lilly's information officer in enterprise information services.

As the Indianapolis-based pharmaceutical giant has grown to 30,000 desktops worldwide, overall IT costs have increased. But the increase is less contentious when managers can view it in terms

of their per-unit usage, Tunstall said.

How does per-unit pricing work? In the case of a desktop unit, the company adds up the costs of software licenses, help desk and security, e-mail and groupware, an Internet browser plus connectivity, the LAN and file-and-print services — then divides that by the number of PCs.

Tunstall discussed the system recently with *Computerworld* senior editor Carol Sliwa.



CONSOLIDATION was a key element, says Lilly's Tunstall

**Q: What was the impetus for the switch?**

**A:** To get away from the discussion of "your IT costs too much" and to get to the bottom of "why you were spending that kind of money."

I wanted to have a discussion of "This is how much it costs, and here's how much you're using."

**Q: What's been the payback?**

**A:** I don't get into a contentious discussion as we go through

the budget process about how much I'm charging people. And in a corporation like ours that has been growing, the unit cost methodology allowed us to have a baseline from which to discuss cost.

**Q: Where are your per-unit savings coming from?**

**A:** Standardizing on a common desktop, a common e-mail system, a common image system of our software on the desktop. Consolidation of the servers we are using. And consolidation of data services. Going to frame relay on the wide-area network dropped our wide-area network cost about 40%.

**Q: Was there any cost associated with the per-unit system?**

**A:** It cost me some labor to do it. [Less than 1% of the total IT budget.]

**Q: What's the hardest part of setting up this type of system?**

**A:** I think the most difficult part was deciding what you were going to measure as the unit and going through the process of putting the methodology in place to calculate units and unit costs.

We've had some mistakes. There was one year we didn't include the right number of units in Unix, for instance — and yet we had all the costs in there.

So the next year, [with] the right number of units, the cost went up, and people wondered what the heck was going on. ▀

## Storing Résumés Digitally Helps Manage Recruitment

Stream of applicants belies labor shortage

BY BARB COLE-GOMOLSKI

With more hiring leads coming over the Web, some companies are trying to manage the deluge — and keep track of applicants for future job openings — by storing résumés in a database.

For example, last January, Best Buy Corp. installed résumé-management software from Resumix Inc. in Sunnyvale, Calif., to help fill professional positions. The software scans and tracks paper résumés along with those received electronically in a searchable database.

"We are inundated with résumés," said Kathy McLean, human resources information systems manager at the Eden Prairie, Minn., company.

Best Buy expects that the system will help it reduce its dependency on outside search firms and temporary agencies while cutting the costs of help-wanted advertising.

Research firms contacted by *Computerworld* said they don't track résumé-scanning soft-

ware as a stand-alone category. However, "demand for this kind of software seems to be on the rise," said Judy Hodges, an analyst at International Data Corp. in Framingham, Mass.

Vendors in the space, including Restrac Inc. in Lexington, Mass., and Hire Systems Inc. in San Mateo, Calif., said their customers report getting anywhere from 5% to 15% of their résumés via the Internet.

At Best Buy, it's not uncommon for the company to receive several hundred résumés for one job opening, many of them via the Web. The National Council on Aging (NCOA) in Washington currently receives via the Web about half the résumés it includes in a national job database for older workers. The résumé-management system lets the organization share them more easily with national employers.

Still, résumé management isn't a panacea. Because it matches keywords on appli-



BEST BUY began using résumé-management software because it was "inundated" with job applications, says manager Kathy McLean

cant résumés with user-defined job descriptions, it might overlook a good candidate because that individual may not have employed the correct syntax.

"We knew that these people had skills that were in demand, but that was not being reflected on their résumés," said Coquese Williams, assistant vice president for workforce development at the NCOA.

Also, not all corporate recruiters are sold on the idea of using résumé-management

software. "Why not just use the databases that are available on the Web?" said Barb Lyman, a technical recruiter at Standard Insurance Co. in Portland, Ore.

And even though the insurance company does a lot of Web-based recruiting, "it doesn't justify the investment in one of these systems," Lyman said. ▀

### MOREONLINE

For articles related to Web-based recruiting, visit our Web site.  
[www.computerworld.com/more](http://www.computerworld.com/more)

## IT Pros Share Lessons on Outsourcing

Their No. 1 tip: Stay competitive

BY THOMAS HOFFMAN  
NEW YORK

If you're planning to outsource a big chunk of your information technology operations, make sure you keep the contract competitive — even after the ink has dried.

That was one of the tips proffered by outsourcing veterans at a panel discussion on lessons learned from working with outsourcers at a recent meeting of the New York chapter of the Society for Information Management.

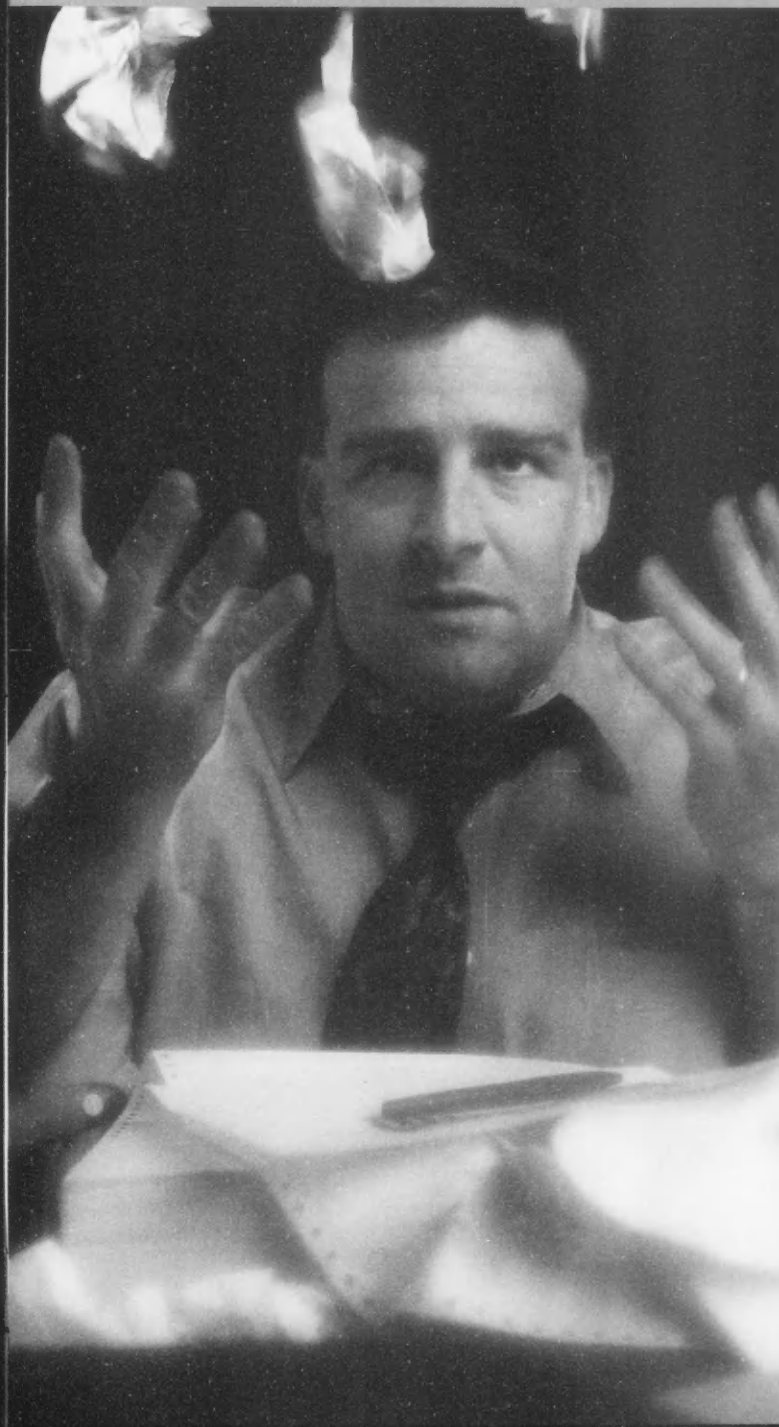
Even if a vendor has been signed to a 10-year megadeal, opening parts of the deal to bids from other vendors can keep the primary outsourcer alert, said Linda Cohen, an analyst at Stamford, Conn.-based Gartner Group Inc.

And having more than one vendor involved can let a user company play one vendor against the other for concessions, said Gary M. Banks, CIO at Xerox Corp. in Stamford, Conn.

Establishing metrics to keep track of how well a vendor is delivering on its promises is also important, Cohen said, but the metrics shouldn't be so detailed that IT people over-seeing the outsourcer are spending all of their time reviewing them. ▀



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ANYWAY, I NEED TO MAKE A  
THE MARKET'S ABOUT  
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# WEB RETAILERS RETOOL FOR MAINSTREAM USERS

Easier-to-navigate shopping sites the goal as Net consumers become less tech-savvy

BY SHARON MACHLIS

UNLIKE longtime Web surfers, newcomers to the Internet are less technologically savvy than ever, causing a number of Web retailers to revamp their sales strategies accordingly.

Newbies want to find items with a minimum of clicks, conduct business quickly and be able to ask questions, experienced Web merchants report.

That means they're likely to frequent sites that are easy to navigate and have plenty of clear options for queries and feedback.

In contrast, longtime Internet enthusiasts "almost want it to be difficult" because they enjoy the challenge of making technology work, said Louise Cooper, vice president of worldwide marketing at online computer retailer Cyberian Outpost Inc. in Kent, Conn.

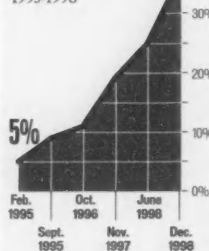
## Site Revamp

Outpost recently revamped its site to make it "more intuitive, more obvious," Cooper said. There's an increase in information available on the home page, for example.

And the company now promotes configured systems more than components for the do-it-yourselfer.

## We've Got the Net

Percentage of U.S. households with Internet access, 1995-1998



Base: Surveys of 16,500 households  
SOURCE: INTECO CORP., NORWALK, CONN.

Outpost is planning a new feature that will allow shoppers to calculate shipping costs before they place an order. "Shipping costs [for Web orders] were a shock to a lot of people," Cooper said.

Dave Rochlin, vice president of marketing at Reel.com Inc., said the online video/digital video disc store must rein in the temptation to be too cutting-edge because of novice users.

That means not using new capabilities from the latest-release browsers or special soft-

ware plug-ins unless a site specifically aims for a technologically sophisticated audience.

"We really have to discipline ourselves here," Rochlin said. "We have a lot of techno-savvy people, [but] we think a lot about usability. There's a huge portion of customers who only know how to get to the Web through [America Online]."

Like many in Internet retailing, Rochlin said he believes there will be a major push to improve customer service this year, in part to cater to newcomers who want the same level of service on the Web that they get when shopping elsewhere.

The change in Internet demographics is also creating opportunities for merchants whose target audience isn't primarily made up of affluent,

highly educated men.

According to a study by the Pew Research Center for the People & the Press in Washington, 71% of adults who started using the Internet in the past year don't have a college degree; 52% were women; and 65% earn less than \$50,000 a year. Only a quarter of new adult Internet users were younger than 30.

Kmart Corp., whose shoppers are typically mothers with children at home, assumes that many of its Kmart.com shoppers are new to the Web, said John Jeanmonod, Internet merchandise manager at the Troy, Mich.-based retailer.

That means making the site easy to use, explaining how things work and ensuring customers know where they are in the checkout process, he said.

Many sites are also starting to conduct daily polls and weekly contests to acquire demographic information about their audience, said Elaine Rubin, vice chairman of the industry trade association Shop.org. "You have to be looking at your customer base every month, at least," she said. "What you build today may not be applicable tomorrow."

## Evolving Strategies

As Web surfers become more mainstream, Internet retailing strategies need to evolve, industry watchers said. "The Internet demographic is quickly coming to resemble the demographic of the population at large," said Ken Casar, an analyst Jupiter Communications Inc. in New York.

For a company like Garden Escape Inc. in Austin, Texas, which sells gardening supplies to an audience that skews toward women around 40, the new Internet demographics are approaching "our sweet spot demographically," said CEO Cliff Sharples.

## Teller Machines Running Ads

Wells Fargo pilots marketing venture

is unique, as short as 30 days and as long as 180 days. We can customize the offering to meet the advertiser's specific needs.

### Q: How?

A: For example, if you're trying to market a minivan, you'd probably want that message in a suburban location, not an urban location, because of the demographics.

We can reprogram advertising from a central location [using Novadigm Inc. distribution software] and change messages daily for an advertising customer to target ads at, say, ATMs in San Jose, [Calif.].

### Q: Won't some customers find that annoying?

A: Customers tell us they like having animated ads during the dead time while transactions are processing. They also like receiving coupons.

### Q: What kind of an investment have you made?

A: We did have to upgrade the majority of our [340 pilot] ATMs to Pentium processors to run the advertising. What

Customers tell us they like having animated ads... while transactions are processing.

BARRY MCCARTHY,  
WELLS FARGO



makes this unique for advertisers is that — unlike billboards, radio, TV or the Internet, where a viewer can walk away or click to another screen — the [ATM] customer is not going anywhere until their transaction is complete.

## SNAPSHOT

### World Wide Wait

The average time, in seconds, to download a home page from one of 40 business-related Web sites during business hours for the week of March 8:

#### Top 5 Best-Performing Web Sites

Wall Street Journal	2.90
Microsoft	3.25
Apple	4.50
AT&T	4.56
Yahoo	4.71

#### Best Areas to Web Surf

Pittsburgh	3.83
Kansas City, Mo.	4.49
Portland, Ore.	4.52

#### Worst Areas to Web Surf

Cleveland	23.64
Denver	14.74
Phoenix	13.68

SOURCE: KEYNOTE SYSTEMS INC. (WWW.KEYNOTE.COM, SAN MATEO, CALIF.)

### Q: Who are your first advertisers?

A: Our first advertiser is Amazon.com, and AT&T WorldNet Business Services will advertise in April. Each arrangement



# FED FUNDS MAY BE TOO LATE FOR SMALL FIRMS

*Corporations lament small suppliers are cutting it close; inconvenience may result*

BY STACY COLLETT

**T**HE FEDERAL government's plan to provide money to small businesses for year 2000 remediation is coming too late in the game, according to corporate year 2000 managers who have already survived the rigors of becoming year 2000-compliant.

While big companies are well into year 2000 remediation tasks, many of their smaller suppliers are not. According to the National Federation of Independent Businesses in Washington, 40% of U.S. small businesses haven't even started year 2000 work.

The U.S. House is considering a bill that would require the Small Business Administration to guarantee loans

made by private lenders to assist the nation's 4.5 million small businesses to correct year 2000 computer problems. The Senate passed the bill earlier this month.

"It's awfully late for anybody who hasn't started now, unless they have only one or two off-the-shelf software packages," said Bob Friz, year 2000 project leader at 3M Co. in Austin, Texas.

## Small Suppliers, Big Problems?

Friz said start-up companies in 3M's supply chain are better protected from year 2000 glitches because most of them have new software. But he said he's more concerned with small and midsize suppliers with 20- or 30-year-old systems — particularly homegrown inventory systems or

## How Big is Y2K For Small Business?

4.5M	small businesses use computers
47%	say they're very dependent on computers
33%	plan to take no action on year 2000
5%	never heard of the millennium bug

SOURCE: NATIONAL FEDERATION OF INDEPENDENT BUSINESSES

order-management systems written in Cobol. "They could be in serious trouble," he said.

"If it's a lot of internally developed stuff, they're just about out of time today," said Elmer Gau, year 2000 administrator at Dunlop Tire Co. in Amherst, N.Y.

Still, some analysts insist year 2000 funding for small businesses is coming at the

right time. "They are less likely to have significantly begun Y2K projects. If anyone is going to benefit from any type of proactivity by the government at this point, it is going to be the smaller businesses," said Andy Bochman, an analyst at Aberdeen Group Inc. in Boston.

"It's late, but I'd rather see [small businesses] do something now than sit and do nothing," said Ron Kerr, senior manager of information services at The Home Depot Inc. in Atlanta. Kerr added that, to their credit, some of Home Depot's smaller suppliers have already completed year 2000 compliance.

3M, Dunlop and Home Depot, which have focused their attention on the year 2000-readiness of their largest critical suppliers, view any year 2000 failures by their smaller suppliers as more of an inconvenience than a serious setback. ■

## BRIEFS

### Yardeni Denies Year 2000 Optimism

Ed Yardeni, year 2000 guru and chief economist at Deutsche Bank Securities Inc. in New York, says he hasn't downgraded his estimate of a 70% probability that year 2000 will cause a serious global recession, despite a report to the contrary in the *Los Angeles Times* that had wide play in news services. "Of course, I would be more than happy to turn less pessimistic," Yardeni said in a statement sent to those on his year 2000 mailing list. "And I will do so if I believe the available data warrants such a change."

### Share Tips at Online Knowledge Center

The Electronic Industries Alliance, a trade organization for the U.S. high-tech industry in Arlington, Va., has partnered with two vendors to create a year 2000 knowledge center so its 2,100 members can share tips on year 2000 via e-mail and browsers. The partners are Computer Sciences Corp. in El Segundo, Calif., and Los Altos, Calif.-based Intraspect Software. Members can visit the site ([www.eia.org](http://www.eia.org)) and click on the year 2000 icon.

### Pension Cheat Sheet

The Department of Labor's Pension and Welfare Benefits Administration has published an electronic cheat sheet ([www.dol.gov/dol/pwba](http://www.dol.gov/dol/pwba)) to help pension plan managers anticipate questions regarding the year 2000 readiness of their pension funds.

## Lawsuit Pegs Retailers as Y2K Scofflaws

*Claims stores liable for what they sell*

BY THOMAS HOFFMAN

Are computer retailers like Circuit City Stores Inc. responsible for informing consumers whether the PCs and shrink-wrapped software they sell is year 2000-ready?

Lawyers for Tom Johnson, a Concord, Calif., resident, said yes. Johnson is suing nine retailers, including Richmond,

Va.-based Circuit City, Delray Beach, Fla.-based Office Depot Inc. and CompUSA Inc. in Dallas. He accuses the retailers of misleading him by failing to inform him about the year 2000-readiness of the computer products they sold.

Although the case is consumer-focused, it does have bearing for many Fortune 1,000 companies that buy shrink-wrapped software and other products from retailers.

Currently, 81% of all com-

mercially sold packaged software isn't yet year 2000-ready, said Lou Marcoccio, an analyst at Gartner Group Inc. in Westborough, Mass.

Rich Ergo, a partner at Bowles & Verna, a Walnut Creek, Calif., law firm representing Johnson, charged that the retailers have violated California's Unfair Business Practices Act by failing to notify consumers that computer products they are purchasing may not work next year.

Ergo's firm is seeking to force the retailers to inform past and present customers whether products they bought are year 2000-ready, plus to return a portion of the profits retailers made from selling non-compliant products.

Said Johnson, "When I buy something from Circuit City, I expect that the sales staff will tell me if what I'm buying is going to work beyond this year."

"There is a possible liability theory here that could work,"

said Dean Morehouse, chairman of the technology practice at Thelen Reid & Priest LLP, a San Francisco-based law firm.

Peter E. Glick, a lawyer representing Circuit City, sent a letter to Johnson's lawyers saying the charge "fails to state a claim because . . . the products at issue are not in fact 'materially defective.'"

A hearing is scheduled for April 1, when the retailers are expected to ask that the suit be dismissed. ■

## SNAPSHOT

### Competitor Comparison

What the nation's top two long-distance communications carriers are spending on year 2000 work:

	AT&T CORP.	MCJWORLD.COM INC.
Fortune 500 rank*	10	62
Spending through third quarter of 1998	\$300M	\$116M**
Estimate of total year 2000 cost	\$600M***	\$500M***

\* As of April 27, 1998. \*\* Only for first three quarters of 1998. \*\*\* Estimates only for 1998 and 1999

SOURCE: COMPANIES' Q3 1998 10-Q; 10-Q/A FILINGS WITH SECURITIES AND EXCHANGE COMMISSION

## States: Don't Blame Us for Y2K Bugs

Six states have passed laws that prevent individuals or companies from suing them for year 2000 issues, and similar laws are in the works in dozens of other states.

The states claim that they are trying to shield taxpayers from paying for nuisance lawsuits,

but opponents fear that those who are truly harmed by states' millennium glitches will have no legal recourse.

Check out our online package of stories about what the states are doing, and why, at [www.computerworld.com/more](http://www.computerworld.com/more).

**MORE ONLINE**

## Customer Focus Drives Sales Automation

BY MATT HAMBLIN

For years, industry analysts have claimed that the majority of sales force automation proj-

ects fail to show any measurable benefits, partly because sales and support teams don't use them.

But analysts said many firms are still willing to try such software to gain even a small advantage over a competitor. The

trend is to link sales teams to the back office using more comprehensive customer relationship management packages.

For example, The Northern Trust Co. in Chicago, a financial services firm that prides

itself on its intimate contacts with well-heeled investors, recently purchased 5,000 seats of Jsales, customer relationship software from Sales Vision Inc. in Charlotte, N.C. The contract is worth about \$2 million, Sales Vision officials said.

Northern Trust hopes to use Jsales to cross-reference data about its customers for greater selling opportunities. Today, it's time-consuming for salespeople working on one type of investment product to share customer data with salespeople offering a different product. But all those databases will now be tied together with Jsales and a custom in-house tool called N-Compass.

Analysts said Jsales is too

new to the market for them to be able to judge whether the tool is superior to those from competitors such as SalesLogix Corp. in Scottsdale, Ariz.; Siebel Systems Corp. in Santa Clara, Calif.; and Pivotal Software Inc. in British Columbia. They said Jsales is more flexible than some because it's completely Java-based and allows end users to perform new chores on an intranet browser.

Analysts said a common reason sales force automation implementations fail is that salespeople worry that automation is going to give them more administrative work that would take time away from selling and reaping commissions.

Steve Locke, vice president of sales and marketing systems, said Northern Trust has intentionally avoided calling Jsales a sales force automation application, preferring to use the term "contact management" instead. "The people servicing client accounts wanted this level of functionality," he said. "It's not something forced on them. They asked for it."

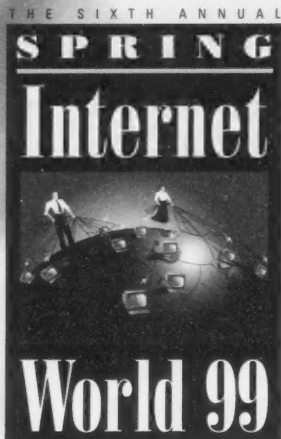
Analysts also said salespeople spurn such products because they worry the boss will be monitoring them more closely. Brian Campo, a project sponsor at Northern Trust, said, "We know there's not going to be 100% acceptance with some worried that Big Brother is watching." ■



**NORTHERN TRUST'S** Steve Locke says salespeople asked for automation

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# ONLINE RÉSUMÉ FRAUD

When it comes to posting your résumé on the Internet, hiring managers warn, you'd better tell the truth, and nothing but the truth By Jill Vitiello

A POPULAR CARTOON depicts a cagey canine sitting at a computer composing his résumé. "The greatest thing about the Internet is that no one knows you're a dog," he says. Which really makes one wonder about the real face behind a résumé posted on the Web. How do hiring managers know that what they see is what they get?

Frequently, résumés posted online or sent via e-mail aren't accompanied by cover letters. Those reviewing such résumés have no clues about the document's authenticity. They're limited to the information provided by the candidate. That anonymity induces some unscrupulous job seekers to claim credentials they don't have.

Savvy job-seekers load their résumés with keywords designed to get them through the computerized screening process. The phrases SAP R/3, Java or Windows NT usually trigger a response. Yet recruiters and hiring managers sometimes end up interviewing a person with no hands-on knowledge of high-demand applications.

"Résumé rigging has always been there," says Richard Wonder, president of Richard Wonder & Associates, a technical recruiting firm based in New York. "Online résumé rigging may enhance an individual's probability of getting an interview... but it will not enhance the prospects of getting or keeping the job."

Information technology managers can work closely with human resources professionals to help separate the wheat from the chaff. "I

provide a checklist of technical criteria to our human resources department so they can prescreen résumés and candidates," says David Geiver, senior technology officer at First Premier Bank in Sioux Falls, S.D.

The criteria change with the job. For example, Geiver is recruiting for a help desk manager. Human resources is screening candidates to make sure they understand that it's a support position, not a springboard to network administration. They're also checking for previous supervisory experience. Geiver says the method works. Yet occasionally a candidate who has embellished his résumé lands an interview.

"People who don't have knowledge or experience will give vague answers. They won't be able to provide technical examples or detail," Geiver says. That's when he politely cuts short the interview and dismisses the candidate.

IT professionals who submit résumés electronically to the city of Orlando, Fla., still fill out an application on-site, says John Matelski, assistant director of technology management for the city. "I don't care if all the information is in the résumé," Matelski says. During the interview, he compares the résumé

with the application and asks questions to see if the candidate's oral explanation of his credentials matches the written version.

## Spotting a Fake

Wonder, whose firm receives approximately 600 electronic résumés per day, has learned to spot the fakes.

"Some résumés are carefully written to conceal that the individual does not have work experience in the United States or is not authorized to work in the U.S.," he says. "A number of people fashion their résumés so that internships, school projects and volunteer [work are presented as] actual work experience."

Other flags are gaps in employment history, inflated salary histories and overstated experience.

And although "we rarely see someone [falsify] certification, we do see premature postings of that certification," says Adam Shandrow, senior technical recruiter at Manpower Technical in Cypress, Calif.

Ironically, even though electronic résumés may be easier to rig, some recruiters prefer them because they are easier to process and track. Electronic résumés also distinguish the players from the wanna-bes.

"It's highly improbable that we would hire from a résumé sent by fax or regular mail," Wonder says. "A fax tells us the candidate doesn't have the technical skills for the job. Mailed résumés are the last candidates to get jobs." ■

Vitiello is a freelance writer in East Brunswick, N.J.

## Advice for Electronic Résumé Writers

### NOTHING BUT THE TRUTH

"Companies are more diligent about post-hire reference checks than ever before," says Richard Wonder, president of Richard Wonder and Associates. "If you lie on a résumé or in an interview, and you are found out, you could be fired on the spot."

### KEEP IT SIMPLE

"A computer programmer who used script typeface, bold and italics couldn't figure out why he never got calls from recruiters. On paper, the résumé stood out with its graphics. But it wouldn't scan electronically, so it never got into a database," Wonder says.

### USE KEYWORDS WISELY

"Don't claim to have been the NT administrator if you were a junior administrator," says Adam Shandrow, senior technical recruiter at Manpower Technical. Do list all the software for which you can claim true expertise. "List hottest technologies first," Wonder adds.

### BE REACHABLE

Always include your e-mail address on your résumé.

— Jill Vitiello





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## NEW REPORTS

## Retail Systems Up Voice-Over IP

Shipments of point-of-sale terminals grew 15% last year, with fat clients still outshipping thin clients, according to new research from IHL Consulting Group.

In its "U.S. Point-of-Sale Market Study," the Boynton Beach, Fla., firm reports that shipments to specialty retailers such as electronics superstores and office-supply outlets led the growth with a 35% increase.

Of systems already installed, 71% ran on MS-DOS or IBM's 4690 operating system, but Windows 95/98 (42% of 1998 shipments) and Windows NT (22% of 1998 shipments) continued to gain ground.

The report costs \$2,500. [www.ihlservices.com](http://www.ihlservices.com)

## 'Baby Bills' Push

Zona Research Inc. has concluded that Microsoft Corp. could benefit immensely if forced by the U.S. government to split into so-called "Baby Bills."

By actively negotiating a settlement now, Microsoft could safeguard access to the most promising emerging markets in exchange for giving up its current control of the desktop.

The analysis is presented in a paper, "United We Fail, Divided We Stand," which is part of a subscription service. [www.zonaresearch.com](http://www.zonaresearch.com)

## Don't Tell

Business organizations don't report security intrusions to law enforcement:

- 84% Negative publicity
- 79% Competitors would use to their advantage
- 58% Civil remedy appeared best
- 36% Unaware that they could report it

Source: Survey of 107 IT security managers; multiple responses allowed

Voice-over IP (VOIP) is a "pivotal technology" that as a worldwide market is expected to grow from \$130 million in 1998 to more than \$1.8 billion in 2003, according to new research from International Data Corp. in Framingham, Mass.

Titled "VOIP Gateways for Service Providers: Market Review and Forecast," the report cautions that VOIP faces a number of major obstacles, including poor interoperability and standards conflicts.

However, it argues that Internet telephony has the potential to redefine the communications industry. It examines market drivers and inhibitors, looks at service providers and presents gateway revenue and port shipment forecasts.

The reports costs \$3,500. [www.idc.com](http://www.idc.com)

## BOOKS

## Recruiting, Global Issues Addressed

Two new books come from research conducted for the Society for Information Management (SIM) International:

*Coping With Labor Scarcity in Information Technology: Strategies and Practices for Effective Recruitment and Retention*, by Ritu Agarwal and Thomas W. Ferratt, suggests labor strategies that can help IT executives choose the best tactical approaches to the IT drought (158 pages, about \$70 plus shipping).

*Crossing Boundaries: The Deployment of Global IT Solutions*, by Rosann Carter (University of South Florida) and Laurie Kirsch (University of Pittsburgh) analyzes the unique nature of global (vs. domestic) IT systems and identifies successful practices for deploying them (131 pages, about \$70).

Both books are published by Pinaflex Educational Resources in Cincinnati.

JIM CHAMPY

## The Dilbert antidote

ON MORE THAN one occasion, I have sat in a systems development or re-engineering team meeting and heard someone say, "That guy doesn't have a clue." The observation is often correct — we've all seen IT managers who don't understand technology and re-engineering and leaders who don't support change — but its effect is to create an air of pessimism and resignation. Given this atmosphere, I'm never surprised when I walk through an IT workplace

and see dozens of books, posters and calendars featuring Scott Adams' cartoon character Dilbert and his canine friend, Dogbert. The appeal of Dilbert's attack is obvious: His acerbic humor generally skewers the boss, a clueless sort who misapplies trendy management ideas, tormenting his people. But there's a dark side to Dilbert. In spite of his clever and humorous point of view, nothing good will come from his persistent pessimism. He has nothing constructive to say about the problems he encounters.

I can't complain about how I've been treated by Dilbert. Re-engineering was the focus of a chapter in Adams' book *The Dilbert Principle*. My work was fairly described (after all, Dilbert does have some intelligence). It's just that I have often wondered why what I call the "Dilbert attitude" is so pervasive in IT organizations.

It goes beyond the fact that many IT people work in cubicles — after all, the subtitle of *The Dilbert Principle* was *A Cubicle's-Eye View of Business, Meetings, Management Fads, and Other Workplace Afflictions*. The Dilbert attitude may come from the long-held belief that IT has been victimized by management and vice versa.

Another possible source of the Dilbert attitude: IT professionals just may be too smart for their own good. When you think you know a lot, you can get pretty cynical when it comes to others' actions. Smart people often see the world in black and white, when, in fact, it isn't.

The need to eliminate cynicism from any team or organization is especially compelling, but it's not just about feeling good or plastering "feel-good" placards on cubicle walls. Almost anything is possible, but whenever a team focuses first on the barriers to getting something done, the result generally is pretty dismal:

Nothing gets done. Replace cynicism with a philosophy of daring, pragmatism and optimism. Daring must be present to help individuals and organizations seize the opportunities that technology presents. How? Confidence! In the words of Mary Kay Ash, founder of Mary Kay Cosmetics, "If you think you can, you can. If you think you can't, you're right."

Pragmatism is critical to individual and organizational change. How do you encourage pragmatism? Tell the truth. Optimism fuels

individual and organizational spirit — especially when failures and challenges arise, as they do in almost any worthwhile project. What encourages optimism? Give yourself and your colleagues permission to keep your minds open to opportunity.

This philosophy must be shared by IT professionals, their managers and their leaders. If the philosophy isn't genuinely shared, expect only more cynicism. The good news? That philosophy is possible as IT and business intersect. The intersection is especially striking in industries such as banking, financial services and retailing.

Cynical workers, beware: The next generation of technologically literate managers entering the workplace will work to eliminate the Dilbert attitude. In fact, managers now expect even more of IT and won't tolerate cynicism for long.

My advice to Dilbert: Take Dogbert for a walk in the park and think about the kind of work-

place that would make you happy. It's daring, pragmatism and optimism that feed the human — and canine — spirit and eventually create business success. ■

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. He can be reached at [JimChampy@ps.net](mailto:JimChampy@ps.net).

IT professionals just may be too smart for their own good.



The background of the advertisement is a collage. At the top, there are rows of electronic circuit boards or server racks. On the right side, there is a partial view of a person's face, showing an eye and part of the cheek. The central text is enclosed in a white rectangular box with a black border.

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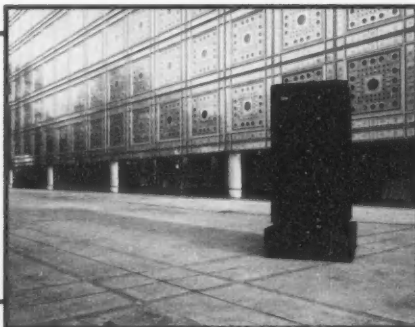
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CD Warehouse is combining its inventory from over 300 stores into a single database and is making it available online in its entirety.

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# Silicon Silli

What's the job reality behind the hype in places like Silicon Swamp, Silicon Sandbar and Silicon Glacier? *Computerworld* asked some leading IT staffing experts for their take on these new high-tech meccas and the real lands of opportunity

By Deborah Radcliff

## Such Hubbub About Sand

An epic sandstorm has swept the country, engulfing everything in its path. It's transformed Louisiana into Silicon Bayou, the Iowa City/Des Moines corridor into Silicorn (sic) Valley; Colorado Springs into Silicon Mountain; and the Minneapolis/St. Paul area into Silicon Snowbank.

OK, so sand doesn't have anything to do with the phenomenon. It's really brand-naming run amok.

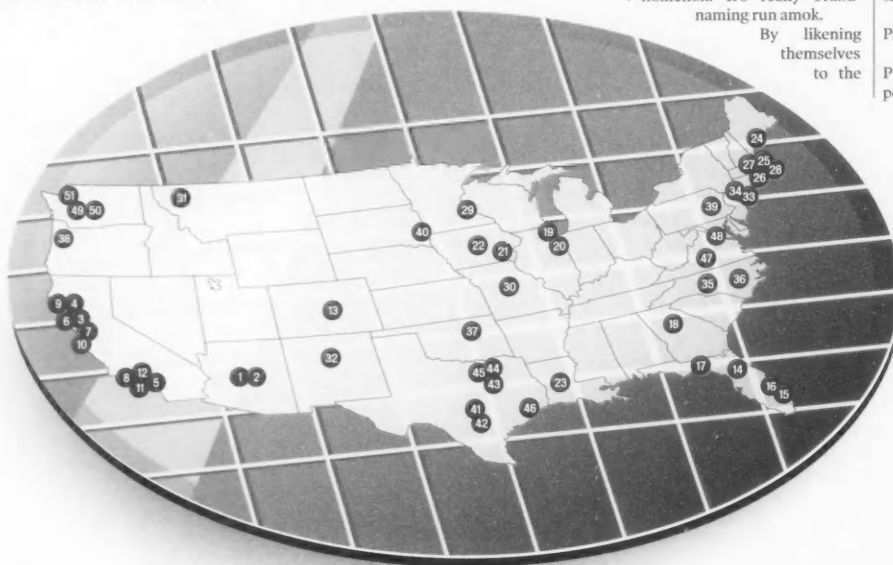
By likening themselves to the

highly successful Silicon Valley in Northern California, other regions hope to lay claim to their own chunk of high-tech business and the big bucks that go with it.

*Computerworld* editors have identified more than 50 "Silicon," "Web," "Cyber" and "Digital" locales in the U.S. Some of them are legitimate or emerging high-tech meccas, promising jobs galore for information technology workers.

Others, like Silicon Prairie in Payne County, Okla., well...

"I mean, Payne County? Puh-lease. I don't think those people know what silicon is,"



## Silicon Cities: A Key

### State/city

#### Arizona

1. Phoenix
2. Phoenix/Scottsdale

#### California

3. Alameda
4. Napa Valley/Santa Rosa
5. Orange County
6. San Francisco
7. San Jose area

8. Santa Monica/Marina Del Rey
9. Santa Rosa/Rte. 101 Corridor
10. Scotts Valley
11. Southern California
12. Ventura/Los Angeles counties

### Nickname

- Silicon Desert  
Telecom Corridor

- Silicon Island  
Silicon Vineyard  
Biotech Beach  
Multimedia Gulch  
Silicon Gulch  
Silicon Valley  
Media Del Rey  
Telecom Corridor  
Silicon Village  
Silicon Freeway  
Digital Coast

### Colorado

13. Colorado Springs

### Florida

14. Entire state

15. Boca Raton

16. Indiantown

17. Perry

### Georgia

18. Atlanta

### Illinois

19. Chicago

20. Champaign/Urbana

### Silicon Mountain

- Silicon Beach  
Silicon Swamp  
Silicon Bayou  
Silicon Swamp  
Silicon Swamp

### Silicon Valley

- Silicon Crescent  
Silicon Valley South

### Silicon City

- Silicon Prairie  
Silicon Prairie

# ness

says Rick Krostag, Los Angeles office director for the IT staffing and recruiting firm Pencom Systems Inc. in New York.

## Who Has the Silicon Goods?

According to Keith Dawson, editor of the technical webzine *Tasty Bits From the Technology Front* (TBTF; [www.tbtf.com](http://www.tbtf.com)), such silicon monikers began to pop up in 1994.

"In a spirit of fun, local boosters and reporters would say, 'We're the Silicon Orchard, chuckle, chuckle,'" says Dawson, whose Siliconia Web site (<http://tpf.com/siliconia.html>) tracks such monikers.

In a spirit of fun, local boosters and reporters would say, 'We're the Silicon Orchard, chuckle, chuckle.'

KEITH DAWSON, EDITOR OF WEBZINE TBTF



SILICON DESERT  
AKA Phoenix

Since last year, "there's been a serious push to brand those areas," Dawson says. "Web Port in Portland [Maine]. Cyber District in Boston. . . . Another was the [Los Angeles] area calling itself the Silicon Coast."

But lest you rush to judge silicon as a key to bigger things, it rarely spells big job opportunities in this game of high-tech hype.

Based on their job market research, Pencom and Menlo Park, Calif.-based RHI Consulting, an IT consulting and project staffing firm, identify only a handful of those Silicon cities as bountiful areas for IT workers.

In addition to California's Silicon Valley, executives from both companies say hot job areas include Silicon Desert in the Phoenix/Scottsdale area; Multimedia Gulch in San Francisco; Telecom Corridor in Richardson, Texas, near Dallas; Silicon Hills (or Range or

Gulch) around Austin, Texas; Biotech Beach in Orange County, Calif., next to the Digital Coast; Cyber District in Boston; Silicon Holler in Northern Virginia and Washington; Silicon Crescent in Atlanta; Silicon Mountain in Colorado Springs; Silicon Forest in Seattle; and Silicon Alley in Manhattan.

## Oh, Give Me a Home

High-tech employers are migrating to wide-open spaces, an abundance of which exists in Texas and Arizona, explains Jessie Cochran, IT director at a high-tech entertainment company in Southern California.

"One of the greatest areas for growth is Phoenix because there's so much land," says Cochran, who works as a contractor for RHI. "I see the area around Scottsdale and Phoenix as a real hot spot. Of course, it can reach 120 in the shade."

Hence, its name, Silicon Desert.

As recently as 1997, Cochran worked contract technology jobs at Silicon Desert financial and aerospace companies. Semiconductor and financial industries are growing there, says Robert Nowlin, chairman of Arizona State University East's Electronics and Computer Engineering Technology Department.

"Intel, Honeywell Inc., SGS-Thomson and an entire sup-

I see the area around Scottsdale and Phoenix as a real hot spot. Of course, it can reach 120 in the shade.

JESSIE COCHRAN, IT DIRECTOR AT A HIGH-TECH ENTERTAINMENT COMPANY AND CONTRACTOR FOR RHI CONSULTING

port industry is here," Nowlin says, adding that college graduates enter the local job market at \$40,000, and holders of master's degrees at \$50,000.



SILICON GULCH  
AKA Dallas/Fort Worth

"And there's a golf course for every 10 people. . . . At least it seems like it," Nowlin says. "If you can't live in Texas, this is probably the next best place."

Aaaah, Texas. Home not only to the Alamo, but to three so-called Silicon Prairies (Austin, Houston and Richardson). And because of a concentration of companies, Richardson is also called Telecom Corridor ([www.telecomcorridor.com](http://www.telecomcorridor.com)).

Richardson copyrighted the name in 1994, according to a Dallas chamber of commerce spokesperson. Nortel Networks, Alcatel USA, Nokia Corp., Fujitsu Network Transmissions Inc., MCI WorldCom Inc. and other big-name telecommunications companies have set up shop in the city.

"There's a synergy here in which the telecom industry snowballed," Dawson says. "The county and state are committed to help this happen. They're giving incentives and tax breaks to attract these types of companies."

Austin is just as hot. In fact, when asked about key growth areas, three staffing experts pointed to Austin's Silicon Hills.

"Our office in the Silicon Hills area is growing quite rapidly," says Greg Scileppi, executive director at RHI. Electronic-commerce/Internet development, microchip de-

*Silicon Silliness, page 52*

## Iowa

21. Iowa City/Fairfield  
22. Iowa City/Des Moines

## Louisiana

23. Entire state

## Maine

24. Portland

## Massachusetts

25. Boston

26. Cape Cod

27. Hudson

28. Boston/Rte. 128 Corridor

## Minnesota

29. Minneapolis/St. Paul

Silicon Prairie  
Silicon Valley

Silicon Bayou

Web Port

Cyber District

Silicon Sandbar

Silicon Hill

Silicon Mountain

Silicon Corridor

Silicon Prairie

Silicon Snowbank

## Missouri

30. Kansas City/St. Louis/Columbia

## Montana

31. Kalispell

## New Mexico

32. North Albuquerque/Rio Rancho

## New York

33. Long Island

34. Manhattan

## North Carolina

35. Catawba County

36. Raleigh/Durham

## Oklahoma

37. Payne County

Silicon River

Silicon Glacier

Silicon Mesa

Silicon Island

Silicon Alley

Telecom Valley

Silicon Seaboard

Silicon Triangle

Silicon Prairie

## Oregon

38. Portland

## Pennsylvania

39. Mountaintop

## South Dakota

40. Sioux Falls

## Texas

41. Austin

42. Austin (Ed Bluestein Blvd.)

43. Dallas/Fort Worth

44. Richardson

45. Dallas/Richardson

46. Houston

Silicon Forest

Silicon Mountain

Silicon Prairie

Silicon Gulch

Silicon Hills

Silicon Range

Silicon Prairie

Silicon Gulch

Telecom Corridor

Silicon Prairie

Telecom Alley

Silicon Prairie

## Virginia

47. Entire state

## Washington

48. Northern Virginia/Washington

## Washington

49. Seattle

50. Wenatchee Valley

51. Whidbey Island

Silicon Dominion

Silicon Plantation

Silicon Holler

Silicon Forest

Silicon Rainforest

Silicon Sound

Silicon Orchard

Silicon Island

# Silicon Silliness

Continued from page 51

sign and software development are strong industries in Austin, he adds. Ben Guzzetta, regional manager for RHI's Texas operations, says employers in both Dallas and Austin are looking for all kinds of tech support people, especially Oracle and Sybase database administrators.

## Big-City Blues

Inner cities are also playing in the silicon sandbox. South Manhattan, now wired for electronic business, calls itself Silicon Alley. But there's a downside to this self-patronization. In the past three years, the name has attracted so many IT workers that Marie



**SILICON ALLEY**  
AKA New York



**SILICON ISLAND**  
AKA Long Island, N.Y.

Panas, an RHI-assigned project manager for Dun & Bradstreet Corp., feels the pinch of competition.

"There's been an influx of highly talented people. The competition for jobs is steeper," Panas says. "I enjoy healthy competition because I really have to keep my skills up."

Web development and Internet services are the leading tech industries in Silicon Alley, says Len Golod, vice president of recruiting at the IT recruiting firm DataCom Technology Group in New York.

"Employers are looking for developers versed in the latest Java, [Visual Basic] script, Co-Fusion, Perl and C++," Golod says. "Companies like Dow Jones Interactive and EarthWeb are creating a Web presence for the surrounding financial and advertising companies."

Thanks to the global shortage of IT workers, high-tech companies are willing to locate

just about anywhere there's qualified workers, says Bill McSpadden, president of Plant-Wide Research Group, a manufacturing market research group in North Billerica, Mass.

Consequently, McSpadden has seen the 40-mile swath around Boston's circumferential Route 128 move from a late-1980s recession to a 1990s boom worthy of the name Cyber District. "This whole area is exploding. I don't think peo-



**SILICON GULCH, RANGE, HILLS AND PRAIRIE**  
AKA Austin, Texas

ple realize that there are over 1,800 high-tech companies here," he says.

## Growing Pains

The sandstorm is a force of nature. Last year, private industry gobbled up \$233.5 billion worth of information processing equipment — almost a third of durable equipment



**SILICON PRAIRIE AND TELECOM ORCHARD**  
AKA Richardson, Texas

production in the U.S., according to the Bureau of Economic Analysis. And that doesn't even include the booming consumer market for such goods.

Hence, there's just too much silicon for California to contain. No doubt more silicon is destined to spill into other cities in the future. But staffing experts warn job seekers not to get swallowed up in all the sand.

Sharon Fox, senior director at Pencom's New York office, says that before moving to any "Silicon" city, "make sure there's more than two high-tech companies" to avoid relocating again should you lose your job. "I think [Silicon is] a played-out title. It should stay out West," she says. ■

Radcliff is a freelance writer in Northern California. You can contact her at DeRad@aol.com.

[The Boston area] is exploding. I don't think people realize that there are over 1,800 high-tech companies here.

BILL McSPADDEN, PRESIDENT OF PLANT-WIDE RESEARCH GROUP



**THE CYBER DISTRICT**  
AKA Boston

There's been an influx of highly talented people [to Silicon Alley]. The competition for jobs is steeper.

MARIE PANAS, RHI-ASSIGNED PROJECT MANAGER FOR DUN & BRADSTREET

## Silicon Salaries Vie for Job-Seekers' Attention

IT salaries in some of the various "Silicon" regions:

LOCATION	WEB DEVELOPER	SR. PROGRAMMER/ANALYST	PROJECT MGR.	NETWORK MGR.
Silicon Alley (Manhattan)*	\$90K-\$110K	\$100K-\$150K	\$75K-\$90K	\$90K-\$120K
Cyber District (Boston)*	\$65K-\$80K	\$75K-\$90K	\$60K-\$75K	\$55K-\$65K
Silicon Hills (Austin)*	\$75K-\$80K	\$65K-\$90K	\$50K-\$60K	\$48K-\$75K
Telecom Alley (Dallas/Richardson)*	\$75K-\$80K	\$65K-\$90K	\$50K-\$60K	\$48K-\$75K
Telecom Corridor (Phoenix/Scottsdale)**	\$75K-\$80K	\$60K-\$75K	\$45K-\$60K	\$50K-\$65K

\* SOURCE: PENCOM SYSTEMS INC., A NEW YORK-BASED IT STAFFING AGENCY WITH NINE OFFICES IN NORTH AMERICA, AND PUBLISHER OF THE 1999 INTERACTIVE SALARY GUIDE. (WWW.PENCOM.COM)

\*\* SOURCE: RHI CONSULTING, A MENLO PARK, CALIF.-BASED IT CONSULTING AND PROJECT STAFFING FIRM. YOU CAN REQUEST A COPY OF ITS SALARY GUIDE AT WWW.RHI.COM



JARGON JUDGE/ANNE McCrory

# Gibberish arising from the Web: Dot-com your brick-and-mortar biz

**O**K, THIS INTERNET thing has gone far enough. I adapted to cyberstuff and e-everything because they were descriptive, clear and — in the beginning — clever, even. But I refuse to allow dot-com to be used as a verb, or to call steel-and-sheetrock malls brick-and-mortar stores.

First, in case you have been lucky enough not to hear it, let me clarify. Yes, dot-com, also known as the .com at the end of addresses for commercial Web sites, has evolved into a verb.

"The company set out to dot-com its business," trumpets a customer story (about Day-Timers) on the Sun Microsystems Web site. In other words, to Web-enable. Or even, to webify. Yet where these "Web" words are understandable and follow conventions of the English language (adding an -ify suffix to form a verb), dot-com meets neither of those criteria.

Search the Web for dot-com and you'll find a few Web sites with the actual words in their name. There's one for registering a domain name (which, for the unacquainted, is the whole Web address up to and including the .com or other ending, such as .org or .gov). Then, there's a dot-com site that sells hats and T-shirts customized with your company name. Yet neither an Internet dot nor the ending com, separately or together, is anything near a part of everyday language.

The Internet-savvy may argue otherwise, of course. And as the Web catches on, more and more people do know that when a Web address is read aloud, the periods in it are pronounced "dot." Nonetheless, the verb looks strange — dot-com and .com seem to occupy different parts of the brain — and essentially is nonsense. So, don't use it, please.

Now with brick and mortar, you may think I'm splitting hairs. First of all, it's been

around since the dawn of technology in distinguishing between the real and the emerging — say, the brick-and-mortar bank branch vs. the electronic, unstaffed ATM kiosk. Second, because it's a metaphor, I'd be going overboard to suggest it's not accurate because most buildings aren't built from brick and mortar anymore. Still, I find the image problematic: Brick and mortar should evoke a turn-of-the-century tenement, a graceful municipal building or a solid, well-built home, not the Wal-Mart just off the interstate.

But even if you disagree with me, there's a bigger turn-off. Look at how the phrase is used: "The online venture isn't taking revenue away from the company's brick-and-mortar stores." Here, brick-and-mortar is actually

superfluous. Take it out of the sentence and you comprehend the same thing. A store is something in the physical world. The online portion or

**Brick and mortar should evoke a turn-of-the-century tenement, a graceful municipal building or a well-built home, not the Wal-Mart just off the interstate.**

unit is the new piece, the ethereal piece, the piece that gets the extra description — the e-store, the online store, the cyberstore. To assume the reverse is to get way ahead of ourselves. We don't yet live so predominantly in a connected, electronic world that we have to step back and clarify when we mean a tangible, physical, actual thing. And personally, I hope we never do. ■



Does any high-tech jargon leave you steamed? Or smiling? Tell ANNE McCRORY, former Computerworld copy desk chief and now assistant business editor. Contact her at [anne\\_mccrory@computerworld.com](mailto:anne_mccrory@computerworld.com).

## CONFERENCES

### Beyond the Web: Workgroups Without Walls

Wyndham Palace Resort & Spa, Lake Buena Vista, Fla., April 12-14.

Sponsor Meta Group Inc.'s consultants will offer their views on tighter alignment between IT and the rest of the business.

Cost: \$995 (Meta clients) \$1,495 (others). Contact: Meta Group, (800) 945-6382 or (203) 973-6700; Web: [www.metagroup.com](http://www.metagroup.com).

### Best Practices in Resolving Year 2000 Issues

Fairmont Hotel, Chicago, April 12-13.

Learn how your organization can maximize the time remaining until Jan. 1, 2000. Speakers will include Giga Information Group Inc. experts as well as year 2000 practitioners.

Cost: \$1,195. Contact: Mary Jean Ahearn at Giga Information Group Inc., (781) 792-2669; e-mail: [conferences@gigaweb.com](mailto:conferences@gigaweb.com); Web: [www.gigaweb.com/events/y2kbp](http://www.gigaweb.com/events/y2kbp).

### Spring Internet World '99

Los Angeles Convention Center, April 12-16.

This show, in its sixth year, focuses on the latest Internet products, plus insights that could help your company's Internet strategy.

Cost: \$1,395-\$1,495. Contact: Penton Media Inc., (800) 500-1959; e-mail: [sivprogram@iw.com](mailto:sivprogram@iw.com); Web: [www.internet.com/spring99](http://www.internet.com/spring99).

### Internet and E-Commerce Conference and Expo

Javits Convention Center, New York, April 26-29.

The latest products, systems and technology solutions in the electronic-commerce world, plus more than 100 conference sessions (co-produced by Gartner Group Inc.).

Cost: \$1,195-\$1,395 (Gartner clients); \$1,395-\$1,595. Contact: Advantstar Expositions, (800) 331-5706 or 218-723-9130; Web: [www.ice-expo.com](http://www.ice-expo.com).

### Windows NT in the Enterprise

Sponsored by Gartner Group Inc. Renaissance Esmeralda Resort, Palm Springs, Calif., May 3-5.

Users and industry analysts offer their perspectives on NT in the workplace and on when and how you should implement Windows 2000 (formerly called NT 5.0).

Cost: \$1,395-\$1,595. Contact: Gartner Group, (800) 778-1997 or

(203) 316-6757; fax: Ashley Pearce at (800) 778-1998 or (203) 316-6774; e-mail: [ashley.pearce@gartner.com](mailto:ashley.pearce@gartner.com). Web: [www.gartner.com](http://www.gartner.com).

### The Leadership Summit On Corporate Entrepreneurship

Westin Copley Place, Boston, May 10-12.

This conference targets senior executives responsible for making their organization faster and more innovative to drive growth.

Cost: \$1,995. Contact: Linkage Inc., (781) 862-3157; fax: (781) 862-2355; Web: [www.linkageinc.com](http://www.linkageinc.com).

### Fast Track to Customer Relationship Management

Scottsdale Plaza Resort, Scottsdale, Ariz., May 10-14.

At this conference, you will have the opportunity to gain insights into best practices in the field of customer relationship management from users and consultants.

Cost: \$1,395. Contact: Innovative Systems Inc., (888) 857-1939; fax: (602) 951-9124; Web: [www.innovativesystems.net/FastTrack/fasttrack99.htm](http://www.innovativesystems.net/FastTrack/fasttrack99.htm).

### NetWorld/Interop With Expo Comm '99

Las Vegas Convention Center, May 10-14.

The main event for data networking and convergence technologies (The fall NetWorld/Interop will take place in Atlanta in September.) Expo Comm was designed for both public carriers and service providers.

Cost: \$1,095. Contact: ZD Events, (800) 472-3976 or (650) 578-6900; fax: (650) 525-0194; Web: [www.interop.com](http://www.interop.com).

### Implementing Year 2000 Strategies

Courtyard by Marriott, Chicago, May 17-18. Radisson Plaza Hotel at Mark Center, Washington, May 24-25.

If you aren't sure what to do down the homestretch, this may be what you need. The conference covers year 2000 contingency planning, business continuity and crisis management.

Cost: \$1,495-\$2,095. Contact: Advanced Learning Institute Inc., (888) 362-7400 or (312) 362-9100; fax: (312) 362-9101; e-mail: [info@aliconferences.com](mailto:info@aliconferences.com).

**What's really required to create information technology leaders? Do today's programs go far enough? Leadership expert Noel M. Tichy and three IT executives committed to leadership development swap views with *Computerworld's* Allan E. Alter**

**CW:** What makes a program a leadership development program instead of a management training program?

**DARWIN JOHN, Society for Information Management (SIM):** At SIM, we're looking at people who are aspiring to larger things. We want to broaden them out, to help them discover new potential they have and expose them to leaders. We bring two or three CIOs to every meeting.

**GALEN BRIGGS, College of Healthcare Information Management (CHIME):** Within CHIME, we're hitting on the skills and exposure CIOs need to step into that leadership role.

**CW:** Do these sound like the necessary ingredients of a leadership program?

**TICHY:** Eighty percent of development is life experience on the job. I don't kid myself that formal learning experience adds a lot. So if you are running an executive program, how do you shape leaders? Put

them in real-life situations.

All the leadership development I've done from my GE days to now has been 'action learning' — real projects. People are at risk. They have to build high-performing teams, do the soft and the hard together, do the financial analytic work and the marketing work and be put under pressure to deliver. Otherwise, a lot of management education is intellectual entertainment.

**BRIGGS:** I agree that most development comes in life experience, but we don't want to minimize what these programs can accomplish. The feedback we get is that people walk away with a lot of new ideas, knowledge, resources and references. These are important.

**TICHY:** When I took over at GE's Leadership Development Institute, they said the same thing. Everyone went home with a smorgasbord of wonderful ideas. Then I said, 'Show me the return on that investment.'

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## LEADERSHIP DEVELOPMENT:

# WHAT WORKS?

It's like a tennis camp: You don't know how good your training is until you play a match. My point is, take it a step further. Take your program and split it up. Four days, go back, have a real revenue-generating information project and get some feedback.

**PETER LEBLANC, Bank of Montreal:** I was listening to Noel, and our program is very similar. They do have to deliver a project at the end of three weeks. They're expected to demonstrate some value out of that project to pay for their course.

**JOHN:** We try to be holistic. When we have a CIO in, we talk about his or her career, but we invite him or her to be open on a personal level. "Here's how I kept work and family balanced. When I was displaced, here's why that happened."

**TICHY:** I want to jump on that. I think leadership is autobiographical. Who you are as a leader comes out of your life experiences. Leaders lead through stories that engage followers.

**JOHN:** With the CIOs' storytelling at SIM Leadership Forums, we try to bring about emotional and spiritual insights. That's when younger people sometimes get a new view of who they can become.

**CW:** What are the key ingredients for success in a leadership program?

**JOHN:** Bring real leaders into the setting. Engage the sponsor of the person who is going, so there is dialogue and mentoring before, during and after. Also, foster networking among the participants and the alumni.

**LEBLANC:** The difference between management training and leadership is that a more select group go to leadership programs. The selection of people you send on leadership courses is key.

**CW:** How do you select people?

**LEBLANC:** It's behavior-based. We don't only want to hear what you've done; we want to hear how you go about doing it. What behaviors and values are you articulating?

We like to have people who listen to other points of view, who don't dominate and shut down innovation. So we'll be looking for something like that during the interview.

**BRIGGS:** We tend to focus on the folks who have good strategic thinking skills, strong interpersonal and communications skills and have to interact and influence customers. Strong technical skills are not necessarily a prerequisite.

**TICHY:** Peter put his finger on it — most of the game is selection, not development. If you're not careful on the selection side, then what we're talking about is wasted effort.

**CW:** Think about the 'aha!' moments when you've seen people take a long step to becoming leaders. What made them happen?

**TICHY:** When Bob Knowing, now the CEO of Covad Communications Group Inc. in Santa Clara, Calif., was at [Chicago-based] Ameritech [Corp.] and put in charge of the Ameritech Institute, he thought this was going to be a kind of punishment. The moment for Knowing was coming to grips [that] he was actually a change agent. He stopped caring whether he got fired or not. Once he had the freedom to say, "I'm going to do what's right; I'm very marketable on the outside," he became a leader. I don't think you can be a leader and be a captive of a bureaucracy.

**JOHN:** We add a little bit of counseling about personal financial management, so you don't get yourself

## THE PARTICIPANTS



**NOEL M. TICHY**

([tichy@umich.edu](mailto:tichy@umich.edu))

Author, University of Michigan business school professor and former director of General Electric Co.'s leadership program. His books include *The Leadership Engine*, *Control Your Destiny or Someone Else Will* and *Every Business Is A Growth Business*.



**DARWIN JOHN**

([johnda@ldschurch.org](mailto:johnda@ldschurch.org))

Former president of the Society for Information Management ([www.simnet.org](http://www.simnet.org)), and an advocate of its Regional Learning Forums. John is the senior IT executive at The Church of Jesus Christ of Latter-day Saints in Salt Lake City.



**GALEN BRIGGS**

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A founder of the Information Management Executive Course, run by the College of Healthcare Information Management Executives ([www.chime-net.org](http://www.chime-net.org)). He is CIO at St. Jude Children's Research Hospital in Memphis.



**PETER LEBLANC**

Senior vice president of solutions and applications at the Bank of Montreal in Toronto, which has established an Institute for Learning and IT leadership development programs for its project managers, relationship managers and other IT staff.

locked in. Out of freedom comes the courage to do the right thing.

**LEBLANC:** One lady just bloomed. Part of it, I thought, was that she had to hit a wall first and then figure out how to get through the wall. She had to be challenged. It was about proposing a tens-of-millions-of-dollars program, being turned down and having the confidence in herself to say "OK, I didn't explain it well, and I'm coming in to tell you one more time." She basically bet her career on her idea. She demonstrated leadership capability, and everyone saw that.

**TICHY:** People have to step out and test themselves as leaders, beyond what the normal risk is.

**LEBLANC:** It's like jumping out of a plane. They don't know where they're going to land, but they have the confidence that they'll figure it out on the way down.

**JOHN:** And a part of it is letting go of fear.

**CW:** What's the hardest part of running a successful leadership program?

**JOHN:** Getting the right people in the room; people who are articulate and willing to be as open as needed for the learning to take place. You spend a lot of goodwill capital with your friends to draw them into such experiences, and sometimes that goodwill capital runs thin.

**BRIGGS:** Ditto. There are so many skill dimensions to leadership. We're looking for people who possess the

attributes that Noel has described and are trying to build a very complex curriculum. And finding the right individuals to put the program together has been a challenge.

**LEBLANC:** As we put leaders through these programs, everything they learned isn't necessarily the way it is back on their jobs. Keeping them motivated when they hit a wall, making sure they don't give up but keep on going, is one difficulty I found. The other one is de-selection. Not everyone who goes through these leadership programs makes it. Some have to be moved aside to other careers or things that may not be to their liking. That's a tough part, too.

**TICHY:** I want to reinforce the importance of that last point: stepping up to your responsibility as leaders and deciding who your A players, your B players and your C players are. That's a tough one culturally.

We have to figure out the next breakthrough [in leadership development]. I think it's going to be speed, scale, integration with real stuff, development as part of everyday life.

**CW:** Give us some advice. Where do we go from here?

**TICHY:** A couple of thoughts. In one of the best programs I was ever involved in, we didn't keep the IT people in their IT ghetto. We did IT, finance and human resources as three staff organizations that had to take on the line organizations they were supporting. Their action-learning project over six months was to deliver a new integrated set of services. The learning was spectacular because these important staff functions were forced to work collaboratively. There's a huge disconnect between those three functions, so I think there's gold to be mined in there.

The other is keep making human development an integral part of doing business day in and day out. Development can't be thought of as just the classroom. You got to use every lever you have, and the most powerful levers you have are the primary position assignments. ■

Alter is Computerworld's department editor, managing. He can be reached at [allan\\_alter@computerworld.com](mailto:allan_alter@computerworld.com).

### MOREONLINE

How do you track the success of a leadership program? What doesn't work? For answers, visit our Web site. [www.computerworld.com/more](http://www.computerworld.com/more)

Eighty percent of development is life experiences on the job. I don't kid myself that formal learning experience adds a lot.

NOEL M. TICHY



## Dear Career Adviser:

*I am an experienced IT professional with mainframe skills and some recent course work relating to Java and application development for the Web. I want to move*

*within my company or outside to more Web-related work. Internally, I feel I am being overlooked. I've also posted my résumé to three Web résumé databases and e-mailed 30 companies, with just two callbacks from headhunters, who were disappointed that I had extensive experience in mainframe programming but had only course work in Web development. Who is getting these jobs? — DISAPPOINTED*

### Dear Disappointed:

You ask two questions: how to market yourself internally within your company and what the return is for posting your résumé on the Web at various career sites. According to David Bernstein, a recruitment professional in Fremont, Calif., while most companies post jobs internally and say they promote from within, companies that actually walk that talk often have an organizational structure in which human resources reports not to finance — where human resources is seen as a cost center — but to the CEO or chief operating officer — where human resources is seen as an inte-

gral part of the company's strategic operations.

Those kinds of companies, like Cisco Systems Inc., for example, educate their employees to prepare them for business models and technologies of the future. So first take a look at where human resources reports and you'll get an idea of how valuable you might become over time.

Second, being heard above the noise on the Internet is a common problem for job seekers and employers alike because millions of résumés and thousands of jobs are posted at various career sites. For your best return on investment, use the latest *CareerXroads* guide, by Gerry Crispin and Mark Mehler, to target the sites best for you.

Post and e-mail to your heart's content but understand that your real job is to market yourself person-to-person, both internally and externally, to real people who can become your powerful champions within a company or an industry.

### Dear Career Adviser:

*A start-up company wants to hire me as the chief archi-*

*tect/vice president of technology. I will be the first addition other than the two founders—that is, person No. 3 in the company. The company is signing a contract for its first round of venture capital. How much equity/options should I request? My skills are in great demand. The venture firm has 30% of the company. Based on current discussions, I am in line for the next-highest stake. — OPTION-SAVVY NEEDED*

### Dear Option-Savvy:

"Options are the subject of a lot of debate," says Anna Wheatley, editor in chief of "Alley-Cat News." There is really no norm, she says, because option grants and pricing depends on the structure and stage of the company, where it's located and what the person will contribute.

"A person coming to a very early-stage company who is responsible for the company's core technology around which the business will be built might be worth 1%, 2%

or even 3% of the company, while someone packaging an existing technology coming in at a later stage would be worth much less," Wheatley says. Valuations also differ by geography. "Companies valued at 10 times their earnings in California might be valued at five to seven times their earnings in New York," she says.

Though a chief architect/vice president of technology may be worth 2% of the company in California, that technologist might get only 1% in New York, where the honcho must capture major markets on Wall Street and Madison Avenue and knock successfully on the doors of Citibank and J. P. Morgan & Co.

Because companies also offer accelerated vesting, guaranteed buy-out clauses and other sweeteners, our savvy chief technology officer should also use a good attorney to review her offer letter, checking the vesting schedule and other option intricacies that can occur as the company issues more shares and attracts investors.

### Dear Career Adviser:

*I'm in my mid-40s, live in Wisconsin and have worked for the same company for the past 15 years. I want to relocate to the Raleigh-Durham,*

*N.C., area. The 100-user LAN I manage has Windows NT servers and DEC VAXs with [Windows] NT, 95 and 98 clients and Integrated Services Digital Network access. I have designed, purchased, installed and deployed nearly every piece of hardware and software my company owns. What is the best method to contact headhunters and employment agents in the Raleigh-Durham area and convey my experience and desires to get the right job? — NORTH CAROLINA, HERE I COME*

### Dear North Carolina:

If companies have to pay to relocate you, they might not want to pay an agency fee. So start by looking for companies that have jobs for which you qualify on your own. On the Web, use HotBot.com or Askjeeves.com to locate companies in North Carolina. Then use Dogpile.com to locate press releases that identify contact people in those companies. Don't be afraid to "call high." Executives will refer you to the right people if you have skills they're interested in.

Next, if you're using particular hardware or software, call those companies and ask for the Raleigh-Durham-based salespeople; it's probably their clients you will want to contact. Also, find local user groups, contact their members and post to related newsgroups. You'll find lots of leads to support your move — and to determine whether paying a fee for your talent will hinder the move. ■



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at [www.computerworld.com/career\\_advisor](http://www.computerworld.com/career_advisor).

## WORKSTYLES

### Making the Most Of Orlando

Orlando, Fla., isn't home only to Walt Disney World. It's also one of the most popular destinations for technology conferences.

At one recent techno-confab there, even conference attendees from as far away as South Africa and Morocco acknowledged that they have made multiple business trips to central Florida's ever-expanding, man-made playground.

If you, too, are lucky enough to get the Orlando assignment — or get stuck there, depending on your perspective — the following are some do's and don'ts from fellow technology business travelers:

#### 1. Don't skip the Disney attractions.

"You're there to be a child again. Let your hair down. It's fun, and that's what life's all about," said Carolyn Brennan, an infor-

mation systems project manager at Tufts Health Plan in Watertown, Mass.

Her personal favorites?

Space Mountain at the Magic Kingdom and "Honey, I Shrunk the Audience" at Epcot — even though "it sounds dumb," she said.

#### 2. Consider venturing off the Disney complex.

Mounair Kabbaaj, a director at Casablanca, Morocco-based Banque Marocaine du Commerce Extérieur, has tried them all in Orlando. His recommendation for some nearby fun? SeaWorld.



#### 3. Stay away from the stores.

"There's lots of rubbish in the shops. It's not like New York or Washington, where there is variety," said Derrick Bennett, director of marketing and sales at FirstNet Pty. in Johannesburg, South Africa. His suggestion? The Disney golf courses.

#### 4. Find an excuse to get out of going if someone wants to send you there in the summer.

"I was amazed by the size of the insects. We don't have insects like that at home," said Elizabeth Lynn, a senior vice president in operations at Star System Inc. in San Diego and a veteran of a dozen business trips to Orlando. Not to mention it's "very hot and humid," she added.

#### 5. And if it's winter . . .

"Bring warm clothes and umbrellas," warned Mike Haase, electronic-commerce program manager at Freightliner Corp. in Portland, Ore. He had the misfortune of hitting Orlando on some gray days when the temperature dipped below 40 degrees at night. Haase's dining endorsement? Fulton's Crab House on Pleasure Island.

#### 6. Don't expect luxury at Disney's Coronado Springs Resort, a popular conference destination.

"If you take the paint off the buildings, it's no better than a Motel 6. But they serve you with a smile," said one IT staffer who asked not to be identified. — Carol Sitwa



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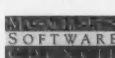
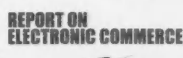
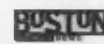


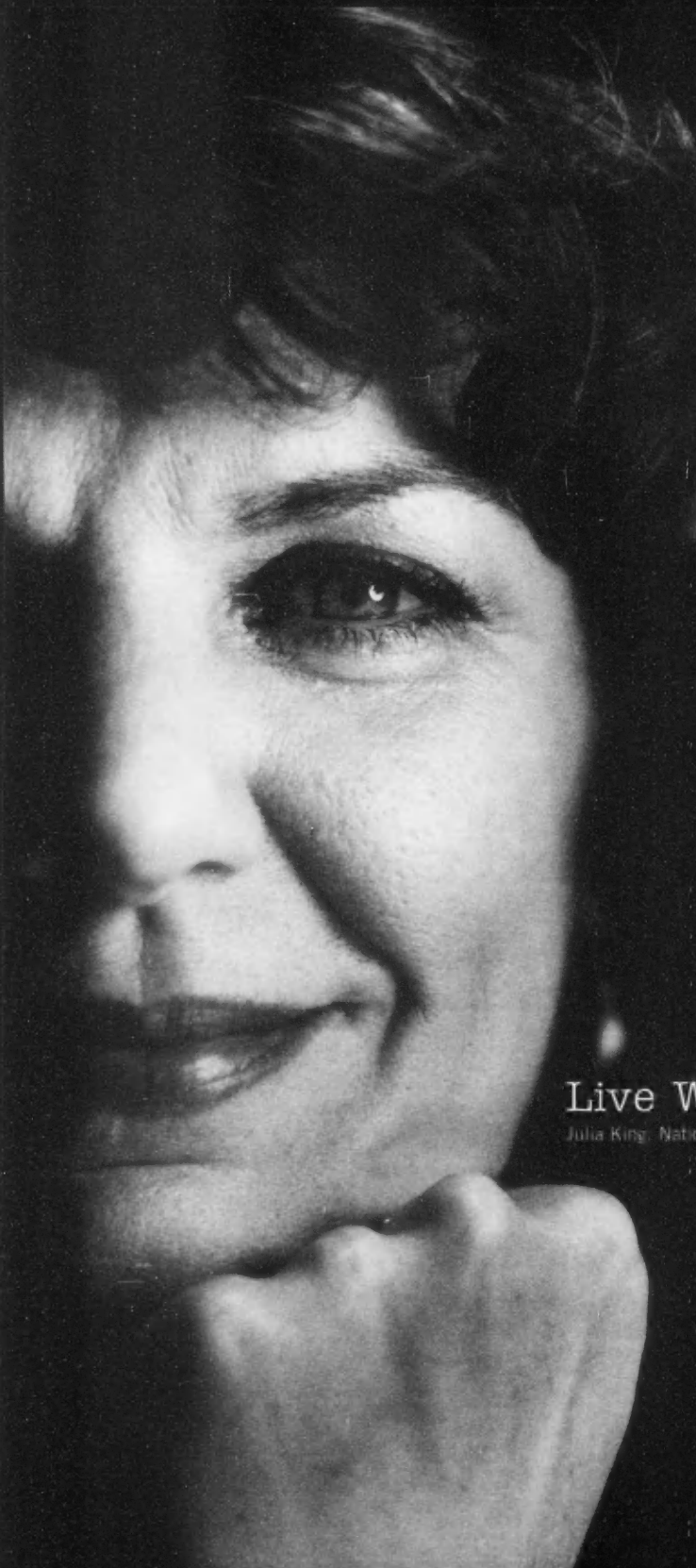
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"Our readers don't think about business in terms of technology. In fact, a lot of the people I talk to aren't even in the IT department. They're marketing managers trying to figure out how to use e-commerce to sell widgets. Or business owners working to keep their supply chain intact. My job is to help people connect the dots...to see how others are doing things, where the pitfalls are, and how they can avoid them. That's what business leaders need to know. I try to give them some new ideas, to spark their imagination. I want our readers to walk away charmed and connected. But most of all, I want them to come back."

## Live Wire

Julia King, National Correspondent

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# TECHNOLOGY

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## GOOD SCANNERS GONE BAD

A new generation of network scanning tools meant to protect corporate networks is being used by some crackers to find vulnerabilities in those networks. Here's how to detect and defeat "stealth" scanners. **66**

## MINDING THE STORAGE

The amount of storage managed by the typical administrator has jumped 70% in two years and will nearly triple again in the next four. We examine new technologies that can help you outrace the flood of data. **72**

## TOKENS' RETURN

Security tokens have been around for years, but a Boston health care provider shows how to use them to provide a single point for security and data access. **64**

## QUICKSTUDY: AGENT TECH

Agent technology can help you dig through the Web's often overwhelming load of information and pull up precisely what you need. **69**

## HELP SERVERS SHARE STORAGE

True storage-area networks (SAN) require middleware that prevents servers from stepping on one another's toes. One new product, called SAN Manager,

was released Monday by Transoft Networks, joining earlier entries from Dell and EMC. **60**

## WEB FAULT TOLERANCE

A new Internet appliance deploys and synchronizes content across multiple, geographically dispersed Web servers. The tool, from F5 Labs, could offer mainframe-like fault tolerance and recovery to Web servers. **62**

## XML WISH LIST

Early adopters are excited by XML, but they say more tools and firmer standards are needed to realize the language's full potential. **63**

## FLASHBACK: SABRE'S START

In 1960, American Airlines took \$150 million (which could have bought a nice fleet of 707s) and spent it on technology. The result: Sabre, the travel reservation system still in use today. **78**

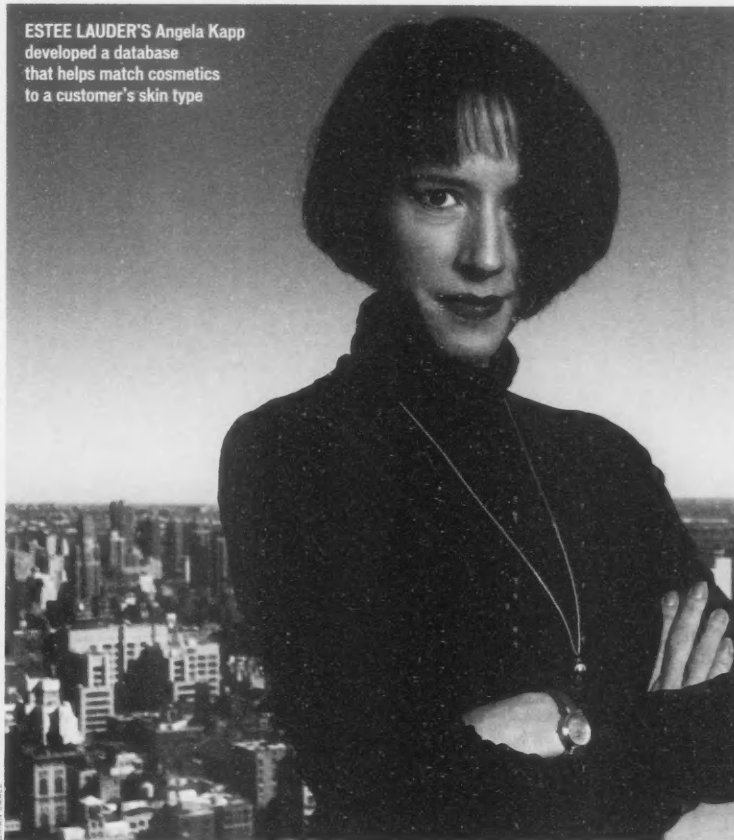
## FRANKLY SPEAKING

Looking to sell your boss on Linux? Frank Hayes lists strategies that are guaranteed... to fail. **68**

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ESTÉE LAUDER'S Angela Kapp developed a database that helps match cosmetics to a customer's skin type



## WEB COMMERCE GETS PERSONAL

IF YOU WANT to get closer to your customers, you'll need to implement complex Web technologies and make good business decisions. Five electronic-commerce sites share the secrets of their success: Estée Lauder, Dow Jones Interactive Publishing, Hallmark Cards, Netmarket and Hasbro Interactive.

74



# NEW TOOLS JUGGLE ACCESS TO DISKS

*Middleware lets servers see only assigned storage*

BY NANCY DILLON

AS MANY information technology managers have learned, it's difficult to maintain lines drawn in a SAN.

That's especially true if the storage-area network (SAN) includes Windows NT.

"If you bring up a raw SAN and hook up all of your NT servers, each will try to claim all of the disk. Then when one tries to write something, the rest go bonkers [with error messages]. NT just doesn't play nice when it comes to partitions," said Mark Hargrove, a network architect for the United Space Alliance at the John F. Kennedy Space Center in Cape Canaveral, Fla. His group handles all the pro-

cessing that goes into preparing for a space shuttle mission.

"Ideally, a SAN connects all servers to all storage" using a front-end LAN as the paradigm, said Robert Gray, an analyst at International Data Corp. in Framingham, Mass. SANs can improve server performance and data availability by moving storage out of individual servers and onto a high-speed network with multipath

corrupt anything."

Several new software tools attempt to address that SAN access problem.

For example, Transoft Networks Inc. in Santa Barbara, Calif., released SAN Manager last week. SAN Manager is middleware that can assign different servers to the various logical unit numbers available on a single storage connection. Logical unit numbers are a type of partition that identifies a physical storage device or part of a storage device. So even if directly connected to vast disk resources, a server only "sees" the storage exclusively assigned to it. Unassigned storage is "masked."

The software supports NT and Unix, works with Fibre Channel hubs and switches and can dynamically reallocate logical unit numbers from a central management console. Pricing starts at \$7,495.

"[Logical unit numbers] masking is really what has been missing for me," said Hargrove, who's beta-testing SAN Manager. Hargrove is building a SAN comprising six storage arrays, eight Fibre Channel switches, 12 NT servers and six Unix servers.

"Before [logical unit num-

## Data Sharing Drives SANs

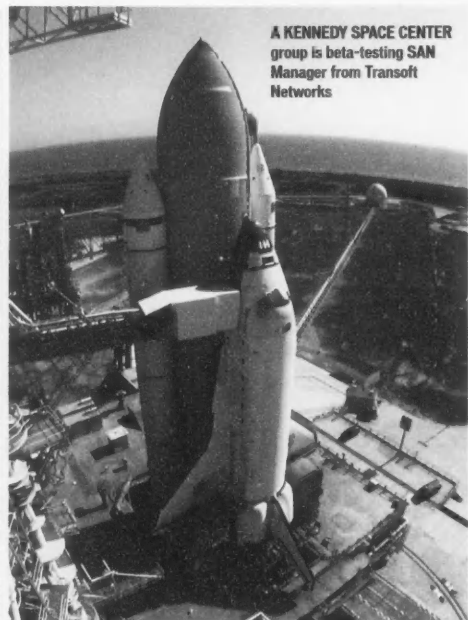
*When extending the function of enterprise storage to a storage-area network, what are the benefits?*

72%	Easier information sharing
63%	Improved information management
57%	Increased information protection
57%	Faster access to data
53%	Increased network availability
52%	Easier and less-expensive administration

Source: Survey of 948 worldwide IT organizations

fail-over. But Gray said they can be a nightmare if users don't find ways to introduce appropriate restrictions.

"Every SAN will require some sort of access management," Gray said. "Without it, rogue servers can get in and



A KENNEDY SPACE CENTER group is beta-testing SAN Manager from Transoft Networks

bers] masking, you had to dedicate an entire storage processor port to one NT server. That got very expensive; my dual-port processors are \$35,000 each," Hargrove said. With SAN Manager, he said, the same NT server can share a single port with multiple servers using a hub or switch.

Other products that tackle the same sharing problem include Hopkinson, Mass.-based

EMC Corp.'s Volume Logix on the high end and Round Rock, Texas-based Dell Computer Corp.'s new OpenManage Storage Consolidation on the low end. But unlike SAN Manager, those products are tied to their proprietary arrays. ■

## MOREONLINE

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# SSA Eases Tie-in to Third-Party Software

*Will support gateway combos to other apps*

BY CRAIG STEDMAN

System Software Associates Inc. (SSA) this week plans to ship middleware that's supposed to make it easier for users to tie the vendor's financial and manufacturing applications to supply-chain planning tools and other products.

Larger enterprise resource planning (ERP) vendors, from SAP AG on down, are also opening up to outside software through high-level application programming interfaces that users or third-party vendors can use to create links to other applications. But SSA is doing hands-on development of gateways to other packages and

then promising to support those combinations.

Easier integration is especially important to SSA's users because big losses have left the Chicago-based company unable to match SAP and other ERP heavyweights that are building their own applications for jobs such as supply-chain planning and customer relationship management.

SSA's gateways have "been overdue for years," said Allan Sylvester, director of information technology at Pluess-Stauffer Industries Inc. in Proctor, Vt. The limestone mining company uses SSA's Business Planning and Control System

(BPCS) to process orders and manage inventories.

Pluess-Stauffer had to do its own development work to tie SSA's software to data analysis tools and to a Lotus Notes application that sends order verifications and other documents

## JUST THE FACTS

### What's New With SSA

**BPCS:** ERP application upgrade with new features such as full euro support and a thin-client mode for order entry.

**Packaged interfaces:** An initial set of 48 gateways that tie BPCS to supply-chain and analysis tools from outside vendors.

**Windows NT:** A release of BPCS for NT-based application servers is due to start controlled shipments in July.

to customers via e-mail or fax.

But Sylvester said he expects to get prebuilt interfaces to a third-party, bar-code system that will let warehouse workers update BPCS directly from their forklifts. "That could save me both time and money," he said.

SSA is a second-tier ERP vendor with about 6,500 installations that mostly run on IBM AS/400 systems. It had revenue of \$421 million in the fiscal year ending last October. But quality problems and delays on a client/server rewrite of BPCS sent the vendor into a tailspin that led to layoffs, a management overhaul and a \$129 million loss last year.

Its gateway technology has been available for several years to users who wanted to develop their own links to other applications. Now, SSA is releasing a set of 48 interfaces

that tie planning and analysis tools from a half-dozen vendors to BPCS.

SSA is working on about 80 other packaged interfaces with about 25 vendors. The plans were announced earlier this month along with a server-based BPCS upgrade (see box).

A big unknown is whether SSA can support a mix of BPCS and outside software and keep it all synchronized for users, said Jim Holincheck, an analyst at Giga Information Group Inc. in Cambridge, Mass. Earlier tries by Oracle Corp. and Baan Co. to tie together batches of applications were "certainly instructive about how hard it is to do this," Holincheck said. ■

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The “best new database” is from a well-established company.

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# APPLIANCE GIVES WEB SERVERS FAULT TOLERANCE

*Tool from F5 Labs works with existing installations to provide global fail-over*

BY CYNTHIA MORGAN

A NEW INTERNET appliance from F5 Labs Inc. may offer a measure of mainframe-like fault tolerance and recovery for Web servers.

The Seattle company's Global/Site Controller, which made its debut last week, deploys and synchronizes content across multiple Web servers, even if they're dispersed across multiple continents. Unlike most server-based fail-over/fault-tolerant techniques, the Global/Site product is plug-and-play

for use in existing installations.

"Products like these are going to make good business sense for the biggest sites because they have a global presence and they need reliable [around-the-clock] performance worldwide," said Paul Lambert, vice president for advanced network operations at MCI WorldCom Inc.'s UUnet Technologies Inc. division in Columbus, Ohio.

Lambert's division identifies promising new Web technologies for UUnet customers. As a cautionary tale, Lambert pointed to the problems suffered by

ETrade Group Inc. in Palo Alto, Calif. Last month, the company's brokerage site crashed repeatedly, shutting out customers.

## Billions at Once

"If you become hot on the Internet, a billion people can try to access at once. You may need wider distribution of your servers ... so that if volume at one site takes it down, the other sites can automatically take over. But that also means your

data must be current on every site," Lambert said.

Dispersing servers across the world makes more sense if bandwidth isn't a problem or if the performance across a global network is more important than the cost of the network path, Lambert said. Most medium and large Web sites will have to weigh the cost of the extra dedicated phone lines needed for a product such as Global/Site

Controller against the benefits it brings, he said.

Global/Site Controller automatically synchronizes content as it's being deployed on one Web server, sending it out to all other connected servers.

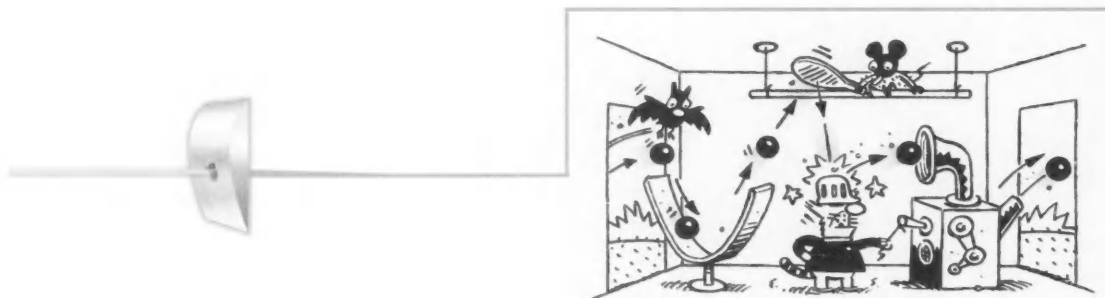
It tracks and saves changes to the site, allowing rollbacks to previous versions. If a server fails, users are automatically transferred to the next available Web server.

The device works with Unix, Windows NT and Mac OS and supports most Web content tools, including the Internet programming language HTML, JavaScript, Active Server Pages and Virtual Reality Modeling Language.

A single-location LAN installation — F5 Labs licenses the appliance by site, not the number of servers it controls — costs \$19,000. A multilocation WAN license is priced at \$49,900 per site. ■

Products like these are going to make good business sense for the biggest sites.

PAUL LAMBERT,  
UUNET TECHNOLOGIES



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## XML Use Takes Off But Quickly Hits Ceiling

Users hindered by lack of tools, standards

BY DAVID ORENSTEIN  
SAN JOSE, CALIF.

**E**ARLY ADOPTERS are excited enough by Extensible Markup Language (XML) to take its current capabilities to the limit. But they said they need more tools and resolved standards to realize XML's full potential to mine and share data across applications and platforms.

Major vendors at the recent Graphics Communications Association's X-Tech '99 show here regaled attendees with plans to embrace emerging standards and develop tools. But help can't come fast enough for the many users building XML applications.

Shell Services International, the information technology unit of Royal Dutch/Shell Group in Houston, is working on XML-related projects that include a nearly real-time manufacturing-process monitoring program. XML transports the data from the manufacturing systems to users' PCs. But many users at Shell said XML is too new to adopt: "Many people are waiting for better third-party support for XML before they move," said senior consultant Brian Smith.

Better vendor support is coming (see chart), as are more XML standards from the World Wide Web Consortium:

- Name spaces to prevent conflicts among similar user-

defined XML tags.

- A querying language to handle XML data.

- The Document Object Model to let programs and scripts dynamically access and update XML documents.

- Data types to define data other than text.

- Extensible Style Language to

make formatting and displaying XML documents easier.

Like Shell Services, the Distributed Objects Integration Team (DO IT) at First Union Corp. in Charlotte, N.C., is already working on XML projects. DO IT is developing an XML tool that will let developers with no Cobol support access the firm's proprietary host-based interfaces, said team manager Bill Barnett. First Union also plans to use

XML to transfer customer data among objects.

But DO IT members are watching the emerging Document Content Description standard to see if it will let them include more meta data in XML documents, said James Collins, a senior consultant at First Union. The team is also still looking for a good XML editor, but vendors' attempts to provide one have fallen short. "They seem more like experiments," he said.

Calvin Beebe, a technical specialist at a Midwestern health care facility, said developers are working on an application to tag doctors' notes with XML to make segments of them searchable and reusable. But the lack of mature tools is forcing developers to consider making their own. The hospital is also hindered by the lack of consistent XML tags and definitions for the medical industry, Beebe said. ■

### XML Announcements

**MICROSOFT:** Internet Explorer 5.0 will feature XML support; newly announced BizTalk e-commerce framework depends heavily on developing XML standards for e-commerce data.

**NETSCAPE:** Plans to integrate XML into its full line of e-commerce products to support transactions, business processes and catalog exchanges. Navigator 5.0 will support XML.

**IBM:** Last week released Version 2.0 of its XML parser and announced Xena, a Java application that lets users create and edit XML documents.

**SUN MICROSYSTEMS:** Developing an XML extension to Java.

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# PENTIUM II SHORTAGE PREDICTED FOR FALL

Intel decries speculation; analysts say Pentium III is 'overkill'

BY MATT HAMBLER

**B**USINESS USERS said Intel Corp.'s new Pentium III processor, with speeds up to 500 MHz, is irrelevant to their mainstream desktop needs.

So users were surprised to learn analysts' projections last week that supplies of its predecessor, the Pentium II, would dry up after September, leaving them little choice but to move on to the Pentium III.

"The Pentium III is more a chip for the graphics or gaming person... It's irrelevant to the mainstream business," said Jim Young, CIO at SpectraCare Inc., a home health care company in Louisville, Ky.

Computerworld asked 103 corporate information tech-

nology managers last week what percentage of their firm's desktop PC acquisitions in the next year would likely be based on the Pentium III. Only 10% said more than half.

## Prefer Pentium II

Young and other users, who said it would make more sense for their IT shops to buy cheaper 450-MHz Pentium IIs than to spring for more-expensive Pentium IIIs, said they hoped analysts were wrong in predicting that stockpiles of Pentium II chips would be depleted.

Young said he expects Pentium IIs will suffice for his company for the next two years.

Analysts said there's a difference of about \$200 between

typical Pentium II and Pentium III desktops, with Pentium IIs selling at an average of \$1,400 and Pentium IIIs at \$1,600.

For stand-alone retail processors, users pay \$300 for Pentium IIs and as much as \$600 for Pentium IIIs, several analysts said. But an Intel spokeswoman said the difference in what Intel charges computer makers for its processors is as little as \$20.

The spokeswoman said analysts who predict the depletion of Pentium II stockpiles are engaging in speculation, but she conceded that "there will be an aggressive ramp-up" to Pentium III machines.

Though she said more than 40 applications, such as Lotus Development Corp.'s Smart-



## Pentium III Plans

Looking at your new PC purchases for typical office application users, what's the most common processor speed (in MHz)?

500	0%
450	9%
400	12%
350/366	20%
333	13%
300	18%
266	11%
Less than 266	17%

Source: Survey of 103 IT managers at companies with 100 or more employees

Suite Millennium Edition, has been enhanced with new instruction sets to take advantage of greater Pentium III speeds, analysts countered that

most of those applications are irrelevant to most businesses.

Gartner Group Inc. analyst Kevin Knox joined other analysts in predicting the Pentium II shortfall. "Pentium II won't be available by [the] third quarter," he said.

Analyst Chris Goodhue, also at Gartner, said a 450-MHz processor is "overkill" for a corporate sector that's not interested in gaming or in producing or running full-motion video — with the notable exception of some sales presentations made using laptops.

"Corporate people are trying to get off the megahertz treadmill," Goodhue said. "They are more interested in management features to lower the total cost of ownership."

"I don't even need the MMX qualities of Pentium II," said Wilbur Hansen, IT manager at Kaufman and Broad Home Corp. in Los Angeles, a nationwide homebuilder with 2,700 desktops. "Nobody has programmed any business function that needs [Pentium III] performance." ■

# Tokens: Not Just for Security Anymore

Merged hospitals use tokens for single point of security and clinical data access

BY ANN HARRISON

Securing sensitive data during tumultuous mergers and takeovers is a priority for a growing number of organizations. When Boston's Beth Israel Hospital and Deaconess Medical Center merged in October 1996, they selected tokens to authorize access to clinical data.

Tokens have been around for years, but they were a good choice for the merger because they provided a single form of user authentication to a new, Web-based interface to both hospitals' medical databases.

John Halamka, chief medical information officer at CareGroup Healthcare System, which manages the combined facility, said the system worked so well that the health care provider is rolling out 2,000 additional tokens in seven Boston-area hospitals.

The tokens "gave us a single way to get on to both computer

systems with an identical look and feel, and voilà, it looks like you have merged databases," Halamka said.

Beth Israel stores its patient records in a custom-built Mumps-based system, while Deaconess uses a Sybase clinical-data repository.

Halamka said a new computer system would have cost millions of dollars and taken years to develop compared with the new CareWeb interface.

The first tokens, which provided remote access to CareWeb, were issued to emergency room staff at the now-combined Beth Israel Deaconess Medical Center.

The tokens to be used in the wider deployment will provide access to CareWeb, other Web-based applications and the Internet.

The SecurID tokens, developed by Security Dynamics Technologies Inc. in Bedford, Mass., are used in combination

with Secure Sockets Layer encryption to secure the local network. The tokens are microprocessor-based handheld devices that calculate and display unpredictable codes that change at specified intervals, typically 60 seconds. The security server compares the password entered by the user with the proper password for that time period.

The user must also enter a user name and a personal identification number. If the SecurID token is lost, it can be disabled at the security server.

## Why Tokens?

Halamka said he looked at biometric tools but disliked the fact that hardware would have to be deployed on every PC. He was also concerned with error rates — because the touch of a greasy fingertip could lock a medical worker out of access to urgently needed medical data.

Kate Borten, chief information security officer at CareGroup, said she appreciated the tokens' inter-

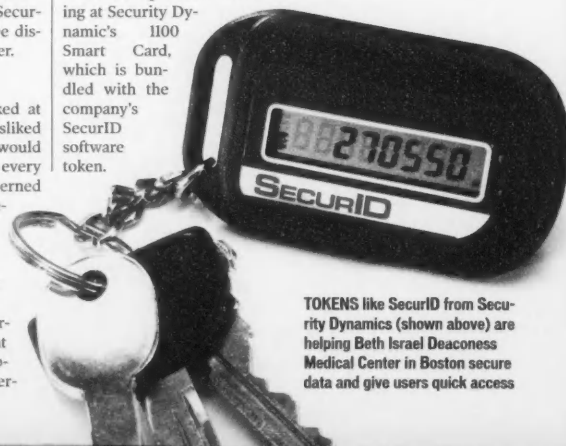
operability with Cisco Systems Inc. and Intel Networking Systems Inc. (formerly Shiva Corp.) routing products and had application programming interfaces that made them compatible with virtual private networks (VPN). That's important because users may be sending authentication passwords remotely over public networks.

Borten said tokens can also be used to secure a server and can be configured to give selective access to data such as payroll records.

CareGroup is now looking at Security Dynamics' 1100 Smart Card, which is bundled with the company's SecurID software token.

Halamka said the smart cards, which cost \$40 per user, could be used to consolidate applications in the medical center's heterogeneous environment — which now uses swipe cards, digital certificates and VPN clients as well as tokens.

Abner Germanow, a research analyst in the Internet security program at International Data Corp. in Framingham, Mass., said companies can standardize their worldwide infrastructures using smart cards in Europe and tokens in the U.S. ■



TOKENS like SecurID from Security Dynamics (shown above) are helping Beth Israel Deaconess Medical Center in Boston secure data and give users quick access



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## BRIEFS

## Post-Hack Acts

What action did you take after experiencing a computer intrusion?

- 96% Patched holes
- 48% Didn't report
- 32% Reported to law enforcement
- 29% Reported to legal counsel

Base: Survey of 295 IT security managers; multiple responses allowed

SOURCE: COMPUTER SECURITY INSTITUTE, SAN FRANCISCO

## Coyote Point Rollouts

Coyote Point Systems Inc. has announced the Equalizer 3.0, a load-balancing appliance, and Envoy, add-on software for traffic routing among geographically distributed servers. The Equalizer can support up to 64 servers per virtual cluster and can balance the load across multiple clusters. An Envoy-enabled Equalizer can support servers separated by unlimited distances and operating on different networks, according to the Sunnyvale, Calif., company.

Pricing for an Envoy-enabled Equalizer starts at \$3,995. [www.coyotepoint.com](http://www.coyotepoint.com)

## Shared Net Access Over ISDN Lines

A router that provides small businesses or branch offices with shared Internet access using an Integrated Services Digital Network (ISDN) line is available from Ramp Networks Inc. WebRamp 410i (\$599) integrates a four-port Ethernet hub with two telephone service ports. It offers support for multiple users with a single user account, according to the Santa Clara, Calif., company. [www.ramnet.com](http://www.ramnet.com)

## Technologic Appliance

Technologic Inc. in Atlanta has released Interceptor 4.0, an appliance for firewall protection and secure remote user access. It has new activity reporting capabilities, an antispam option and built-in routing so it can be plugged directly into analog or ISDN phone lines. No separate router is needed. Pricing starts at \$3,745 for an unlimited number of users. [www.technologic.com](http://www.technologic.com)

## WHEN GOOD SCANNERS GO BAD

Crackers are turning some scanning tools against the networks they should protect

BY ANN HARRISON

Network scanning tools help information technology managers find security holes such as open ports or lists of running services on a host. But crackers are using a new generation of "stealth" scanners to plot attacks on the networks they were supposed to protect.

Stealth scanners are dangerous because they can be modified to fall under the threshold of audit trails and intrusion-detection systems, making the attempted probes harder to detect.

"If we get a little lazy, we are going to miss it. And with the traditional thresholds you set up and patterns you look for, you are not going to be able to pick it up," said Karen Evans, a senior network security offi-

most 200 separate operating systems remotely and thus target their attacks. Nmap also sends out decoy packets of data over the network to mask the true source of a scan. When Department of Defense officials suggested that the Pentagon attacks were the work of overseas crackers, the Shadow team pointed to Nmap.

Nmap probes networks by sending data packets to ports, or entry points to network servers, using TCP and Unreliable Datagram Protocol. Crackers can also use Nmap to automatically probe many sites on a network for vulnerabilities.

Analysts from the Shadow team recognized Nmaps from its distinctive use of syn packets, which are the first packets

ing this month, the tool brings greater sophistication to a wider number of crackers.

"The intelligence that can be garnered using Nmap is extensive," Green said. "Everything that a wily hacker needs to know about your system is there."

Security consultants recommend running your own Nmap scans to find unsecured servers that can be accessed around the corporate firewall.

The Shadow team has integrated Nmap into its scanning systems as has NASA's Ames Research Center at Moffett Field, Calif.

"Right now, it's basically a suffer-along scenario," Green said. But Nmap lets security managers "know what the hackers know about you," he added.

David Remnitz, managing partner at IFsec, a New York computer security consulting firm, said network managers should also adjust intrusion-detection thresholds and place their intrusion-detection tools on the same network segment as the machines they protect. Though that approach screens out random network traffic and highlights suspicious packets, Remnitz acknowledged that it may also generate false alarms.

"If you make it too sensitive, you start tripping a lot of false positives, and then you become immune to false positives and you miss something," Evans observed.

Jacob Carlson, IFsec's senior security consultant, said Nmap is a particular threat to Linux users because many developers have access to the source code and because security holes are rapidly disseminated. Carlson said proxy firewalls keep scanners from evaluating network architecture, and he urges the use of host-based and network-based intrusion-detection systems.

"It takes constant monitoring," Evans said. "It's not one tool over another; it's the mind-set of the staff who review our systems, read information, put in proper patches and do proper testing." ■

## What to Do to Prevent Attack

Most network managers try to detect network attacks after the fact by searching logs from firewalls, routers and hosts for the telltale signs of an attack.

By that time, it's often too late. Network managers should instead use cutting-edge tools that analyze the data gathered by scanners such as Nmap, said David Remnitz, managing partner at computer security firm IFsec in New York. Those tools analyze attack patterns and build databases of possible areas of vulnerability, thus helping network managers repel attacks.

Remnitz recommended tools such as Network Flight Recorder, created by a Washington-based company of the same name, which tracks and analyzes data packets sent from and received by a network server.

Software developer H. D. Moore has created a series of shareware Perl scripts called Nlog to create a flat-file database of Nmap log files and to generate reports ([www.nlog.ings.com](http://www.nlog.ings.com)). But Karen Evans, a security manager in the Office of Justice Program at the Department of Justice, noted that it's not easy to find analysts who can accurately evaluate Nmap scans.

Of course, the combination of Nmap and Nlog also provides all the information necessary for a well-informed, precise assault on a network or host. "Using Nmap and Nlog in concert creates extensive maps of networks that can be stored ahead of time," said Stephen Northcutt, a computer security consultant who spoke with members of the Naval Surface Warfare Center's Shadow intrusion-detection team at a recent briefing.

"As new exploits are discovered, the hacker can simply get a listing of the systems that are vulnerable and then go to work."

The key is to use those network maps to find and fix those weak spots before a cracker finds them.

-Ann Harrison

## Scanning the Scanners

A sample of vendor and freeware network scanning tools

NAME	PROVIDER/WEB SITE
CyberCop Scanner	Network Associates Inc. ( <a href="http://www.nai.com">www.nai.com</a> )
NetRecon	Axent Technologies Inc. ( <a href="http://www.axent.com">www.axent.com</a> )
Netsolar	Cisco Systems Inc. ( <a href="http://www.cisco.com">www.cisco.com</a> )
Internet Scanner	Internet Security Systems Group ( <a href="http://www.iss.net">www.iss.net</a> )
Nessus	The Nessus Project ( <a href="http://www.nessus.org">www.nessus.org</a> )
Nmap	Freeware ( <a href="http://www.insecure.org/nmap">www.insecure.org/nmap</a> )
Netfective	Netfect Inc. ( <a href="http://www.netfect.com/contactus.html">www.netfect.com/contactus.html</a> )
SATAN	In public domain ( <a href="http://www.fish.com/satan">www.fish.com/satan</a> )

SOURCE: SANS INSTITUTE, BETHESDA, MD

cial at the U.S. Department of Justice.

One stealth scanner, a shareware tool known as Nmap (available at [www.insecure.org/nmap](http://www.insecure.org/nmap)), was recently identified by the Shadow intrusion-detection team at the Naval Surface Warfare Center as the likely source of recent highly publicized attacks on Pentagon computer systems.

Although Nmap isn't new, the recently released Version 2.08 gained TCP/IP fingerprinting capability, which allows crackers to identify al-

sent from client to server when a TCP connection is opened. Nmap typically sends syn packets to a random range of destination ports, then sends packets to ports with high numbers, and finally more syn packets to a single port.

Instead of scanning network ports at random, Nmap lets crackers launch precisely planned attacks. Nmap is relatively easy to use and can scan a network in seconds. According to John Green, a member of the Shadow team who participated in an online Nmap brief-

## MOREONLINE

For security resources, visit our Web site. [www.computerworld.com/more](http://www.computerworld.com/more)

# Photo Touch-Ups

BY RUSSELL KAY

**I**N 1982, *National Geographic* caused an uproar when it moved the Great Pyramid to make a more attractive cover layout. Nowadays, we take such manipulation for granted, and digital retouchers routinely erase from photos wrinkles, dust spots and any unwanted elements (from an errant strand of hair to an entire person). We no longer assume that a photograph represents truth or the real world.

Whether you're producing the company newsletter, sprucing up a PowerPoint presentation or creating a keepsake picture of your child, you may have to use a photo that has a bad element. Whether

it's a tree growing out of someone's head, a picture of your newest facility taken on a grimly gray day or product shot that came out the wrong color, you often have to start out with a flawed image and make it better. The good news is, software to do all that is now inexpensive and widely available.

The standard for image editing is Adobe Systems Inc.'s Photoshop 5.0, but the \$995 industrial-strength package is overkill for beginners and casual users. For them, lower-priced, entry-level products help simplify common tasks such as the following:

- Cropping, resizing and straightening.
- Modifying color, brightness and contrast.
- Eliminating "red-eye."
- Cleaning up dust spots.
- Erasing objects.
- Transforming the photo via graphic special effects.
- Combining and framing photos with

other graphics and text.

My original intent was to compare two "consumer-grade" programs from the point of view of the inexperienced, occasional user, who would have personal and light-business applications. I wanted to avoid the high-end programs like Photoshop, Corel Corp.'s CorelDraw or Deneba Systems Inc.'s Canvas.

I chose to review the Home Edition of Adobe's PhotoDeluxe 3.0 rather than the Business Edition, which has more of a small office/home office flavor.

The other package I looked at is Microsoft Corp.'s relatively new PhotoDraw 2000, which unexpectedly turned out to be a different sort of product. It has more features and capabilities than PhotoDeluxe (though fewer than Photoshop) and is a bit harder to use. Thus, I present an apples-to-oranges comparison: one package that's great for beginners and one that's better suited for those who need more capability.

## Microsoft PhotoDraw 2000

Microsoft Corp.  
www.microsoft.com/photodraw  
\$149.95

PhotoDraw 2000 is a more businesslike program than either version of PhotoDeluxe. It offers considerably more features and capabilities but less help in the editing process. Its on-screen interface is clearly related to other Microsoft Office products, using the same kinds of tool bars. However, it doesn't guide you as clearly through the editing process as the Adobe system does.

Still, Microsoft has a big advantage with its Visual Open, which shows thumbnails of all image files in a directory. Adobe uses the normal Windows dialogue, making you guess what's in files with automatically assigned names like 02260014.jpg and 02260015.jpg.

PhotoDraw 2000 lets you easily assemble many different images into a single composite, just by dragging and dropping. Those components can be text, bit maps, vector-based clip art, photographs and objects you draw yourself, with full control over elements such as shapes, brushes and colors.

A pane on the left side of the screen shows thumbnails of each of the various elements individually, plus the composite. You can select any element and modify it alone, even while it's in the composite. That feature gives PhotoDraw 2000 the power of Photoshop's layering, but PhotoDraw is much easier to use. Also, any of the elements, including text, can be modified with the tools for color and other effects.

In one test, I tried to isolate one part of a photo and change its brightness. In PhotoDeluxe, the steps for performing that task were clear - you trace the area with the cursor, and the program automatically finds the edge of the image on which you want to work. But with PhotoDraw, I had to "cut out" the object, but that didn't do anything until I chose from further options of drawing, edge-finding (less flexible than Adobe's) and modifying shape or color. It took several tries.

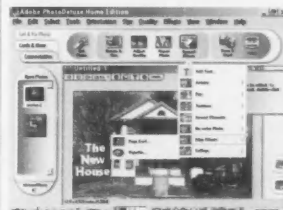
When adding type to an image, PhotoDraw wouldn't show me all the fonts installed on my system - just those in TrueType format. Also, even though it let me create more complex images, PhotoDraw offered fewer choices when it came to saving. I wanted to save several photos as EPS files for publication, but that's not a Microsoft option. However, a "Save For Use In" menu option will be helpful to those who don't know the difference between a GIF, a TIFF and a JPEG.

All in all, PhotoDraw is an impressive package. It doesn't have all the bells and whistles of more expensive products but offers plenty of capability at a bargain price. And it integrates nicely with the rest of the Microsoft Office products.

## Adobe PhotoDeluxe 3.0 Home Edition

Adobe Systems Inc.  
www.adobe.com  
\$49

PhotoDeluxe has an eye-catching graphical interface that leads the user through the most common steps of editing a picture. As with most editing packages, it offers real-time previews of what changes will look like before you commit to making them. You can get pictures from a file, a scanner or directly from a digital camera - at least in theory. Neither PhotoDeluxe nor PhotoDraw 2000 were able to find either of the two cameras (an Epson



ADOBE PHOTODELUXE 3.0 Home Edition is a great package for basic tasks

America Inc. PhotoPC 750Z and an Eastman Kodak Co. DC-260 Zoom) that I used in testing, but that's a relatively minor flaw shared by many other graphics software packages.

PhotoDeluxe offers the user a lot of help. For example, when you want to adjust color, instead of giving you a series of sliders and making you guess what to do, it gives you tiny thumbnail views, each altered in a different color direction. That's very helpful, especially if you're not sure whether you want more red or more magenta in a picture. Presented with those previews, your choice is instinctive.

A variety of special "artistic" effects are available, as with most of the photo-editing packages. Such special effects are perhaps the most dramatic features - and also, I suspect, the least used. The effects are fun to play with for a while, and they can be very useful when you have to salvage something from a picture that's otherwise unusable - for example, one in which the subject's eyes are closed or the image is blurred.

For basic jobs like producing a card with a single photo, PhotoDeluxe is a good package to start with. But once you get into more sophisticated manipulation and more complex images, you're ready to move up.

## MOREONLINE

For a review of Enroute Imaging's QuickStitch, visit our Web site:  
www.computerworld.com/more



MICROSOFT PHOTODRAW 2000 has more features but is more complicated



## BRIEFS

SIA: Worldwide  
Chip Sales Up

Global sales of semiconductor manufacturers in January totaled \$11.1 billion, a 1.2% rise over January 1998, according to a report last week from the Semiconductor Industry Alliance (SIA), an industry group. Sales in the Americas dropped 2.7%, the SIA said. Semiconductor sales rallied in the Asia-Pacific region, rising 9.1% despite the ongoing financial crisis there.

MineShare Offers  
Web-Access Suite

MineShare Inc. has announced MineShare Information Portal, a software suite for building Web-based access to unstructured company data. According to the Santa Monica, Calif., company, users interact with the MineShare report repository to catalog, search and retrieve content in file systems and data warehouses. Pricing starts at \$100,000.

[www.mineshare.com](http://www.mineshare.com)

## Training Upgrade

Mountain View, Calif.-based Docent Inc. is shipping Docent Enterprise 3.0, an upgrade of its Web-based training software. The new version lets remote users download courses to their PCs or via CD-ROM and have their coursework automatically synchronized when they reconnect to the network.

Pricing ranges from \$125 to \$275 per user.

[www.docent.com](http://www.docent.com)

UpShot Sales  
Automation

Mountain View, Calif.-based UpShot Corp. has released a Web-based sales automation application called UpShot Sales 2.0. It's based on Microsoft Corp.'s Component Object Model architecture.

The server costs \$3,499; pricing for each seat ranges from \$499 to \$699.

[www.upshot.com](http://www.upshot.com)

IFS Revamps  
ERP Suite

Industrial & Financial Systems AB (IFS), a Swedish maker of enterprise resource planning applications, plans to ship an upgrade of its software in the U.S. during the third quarter. IFS Applications 2000 will include a product configurator for use by salespeople and an initial set of electronic-commerce features. IFS expects to release the upgrade in Europe by midyear.

[www.ifsab.com](http://www.ifsab.com)

Decision-Support  
Tool Bows

Perspecta Inc. has announced Perspecta 3.0, decision-support software that intelligently links databases with self-service Web applications. The suite includes three modules and supports Extensible Markup Language.

Pricing is \$60,000 for professional services, \$20,000 for the developer kit and \$35,000 per CPU.

[www.perspecta.com](http://www.perspecta.com)

Who's  
Buying What

New York-based pharmaceutical manufacturer PFIZER INC. said it will standardize on ORACLE CORP.'s Clinical Application in several of its worldwide facilities. . . . ALARIS MEDICAL INC., a San Diego-based infusion therapy firm, has selected INFORMIX CORP.'s Dynamic Server for sales, distribution and finance management applications. . . . Retailer MONTGOMERY WARD & CO.'s A&E Signature Service division said it has selected Santa Clara, Calif.-based VANTIVE CORP.'s Enterprise tool for sales, marketing and customer-service activities.

FRANKLY SPEAKING/FRANK HAYES

## Fear of Linux

**H**UNDREDS OF MESSAGES. Literally. That's what poured in after CNN.com reprinted the column on Linux that appeared in this space two weeks ago. In the column, I ridiculed the mainstream media hype that surrounded the LinuxWorld Conference & Expo earlier this month and recommended that IT professionals ignore the hype and evaluate Linux on its merits as software.

Oh, did I get messages. I got messages from people who called me a nitwit for criticizing Linux itself (I didn't). Messages that took me to task because I was calling Linux nothing but hype (I wasn't).

And many messages that insisted I missed the most important thing about Linux (though they didn't agree on what that was).

Maybe the most plaintive message was from a webmaster who wanted to know "why Linux is so unpopular in most IT shops. Our CEO really wants to avoid Linux and any other 'open-source' solutions at any cost. If he chooses Microsoft, then he can follow an established path that really never went anywhere."

That's a familiar cry, isn't it? Especially for IT people old enough to remember when IBM or Digital or Sperry was that safe choice the CEO trusted.

Trouble is, there never has been an easy way to overcome a CEO's fear of new or different technology. It takes hard work, hard numbers and a solid business case — and that still may not persuade the boss to launch even a pilot project.

But there are a few things that definitely won't encourage a gun-shy boss to try something like Linux.

**Don't** sing the praises of Linux's internationally distributed development process — the fact that Linux's programmers are scattered across the globe. Nervous bosses like to know exactly where to turn when there's a problem.

Instead, find a single consulting outfit that can be hired to be your Linux support. No finger-pointing, no confusion — just one number to call when there's trouble. That's what makes executives feel better.

Tempting as it might be, **don't** wax enthusiastic about how often Linux revisions and bug fixes arrive. Upgrades, revisions and patches still mean downtime — and they sound expensive to a nervous boss.

Instead, point out that upgrading — or not

upgrading — will be completely under your IT shop's control. Overbearing vendors won't be able to strong-arm you into an upgrade. Out-of-business vendors won't be able to leave you orphaned. That's comforting.

If you're adventurous and want to try pushing Linux on the desktop, **don't** trumpet the fact that all Linux applications are free. They won't be

once you've allocated the staff time to install them and train users. Besides, "free" sounds a lot like "worthless" to many department heads.

Instead, emphasize that you'll be able to control real user costs. That gives those department heads budget flexibility — and "controlling costs" always sounds good in the executive suite.

**Don't** try to claim Linux is the wave of the future. That means risk. **Don't** hype the fact that it's beloved by twentysomething IT wizards — that smacks of immaturity.

Pitch Linux as reliable, tested and stable. Find and present case studies of Linux in large, successful companies — including your direct competitors, if

possible. If the other guys are using it, your bosses know they're in familiar company.

Finally — and maybe most important — **don't** make promises that sound too good to be true. Nervous bosses **don't** trust extravagant claims. Neither, for that matter, should you.

Underpromise and overdeliver — and just maybe you'll undercut and overcome your boss' fear of Linux. ■

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is [frank\\_hayes@computerworld.com](mailto:frank_hayes@computerworld.com).

A list of 'don'ts'  
for would-be  
adopters.



# Agent Technology

BY SHARON MACHLIS

**A**GENTS CAN help automate the process of searching through and evaluating reams of information on the Web.

For example, Web sites such as Amazon.com's Shop the Web, Excite Inc.'s Jango.com and MySimon Inc.'s MySimon.com use agent technology to help users compare prices for fragrances, book titles or other items on multiple sites.

Agents are "an extremely hot area," says Allen Bonde, an analyst at The Extraprise Group in Boston. "We are early on in the adoption curve," he says.

## DEFINITION

Agents, also known as bots, are "intelligent" applications that find and analyze information on the Net. They can deliver price comparisons for merchandise on different Web retail sites or help find information about specific topics. Users can't buy agents, but they use them when they go to certain shopping sites.

For now, without a standard way of defining catalog items, descriptions and even prices on a Web site, developers must manually create an interface for tapping in to data on each site. Not all Web retailers are

happy about cooperating with agents because they allow consumers to check information on a retail site without actually logging in. That makes merchandise more of a price-sensitive commodity and less

brand-important.

In addition, "unless you know exactly what you want, [agents] are useless," notes Paul Hagen, an analyst at Cambridge, Mass.-based Forrester Research Inc. Looking for a shirt isn't good enough; you have to specify style, color and the like.

Other types of agents can conduct intelligent searches or help users find news reports and useful sites based on stated preferences.

According to Hagen, the current generation of search agents tends to bring up inappropriate items more often than a good hit.

"A year from now, people are still going to be experimenting

## AT A GLANCE

### Agents to try

- **Alexa Internet**, Web navigation, [www.alexa.com](http://www.alexa.com)
- **Jango** (part of Excite Inc.), shopping, [www.jango.com](http://www.jango.com)
- **Jungle** (recently purchased by Amazon.com), shopping, [shoptheweb.amazon.com](http://shoptheweb.amazon.com)
- **MySimon Inc.**, shopping, [www.mysimon.com](http://www.mysimon.com)
- **ShallowRed**, customer service, [www.neuromedia.com](http://www.neuromedia.com)

with them, but they're still going to be struggling with them," Hagen says. "There's a danger of disappointing users."

### On the Horizon

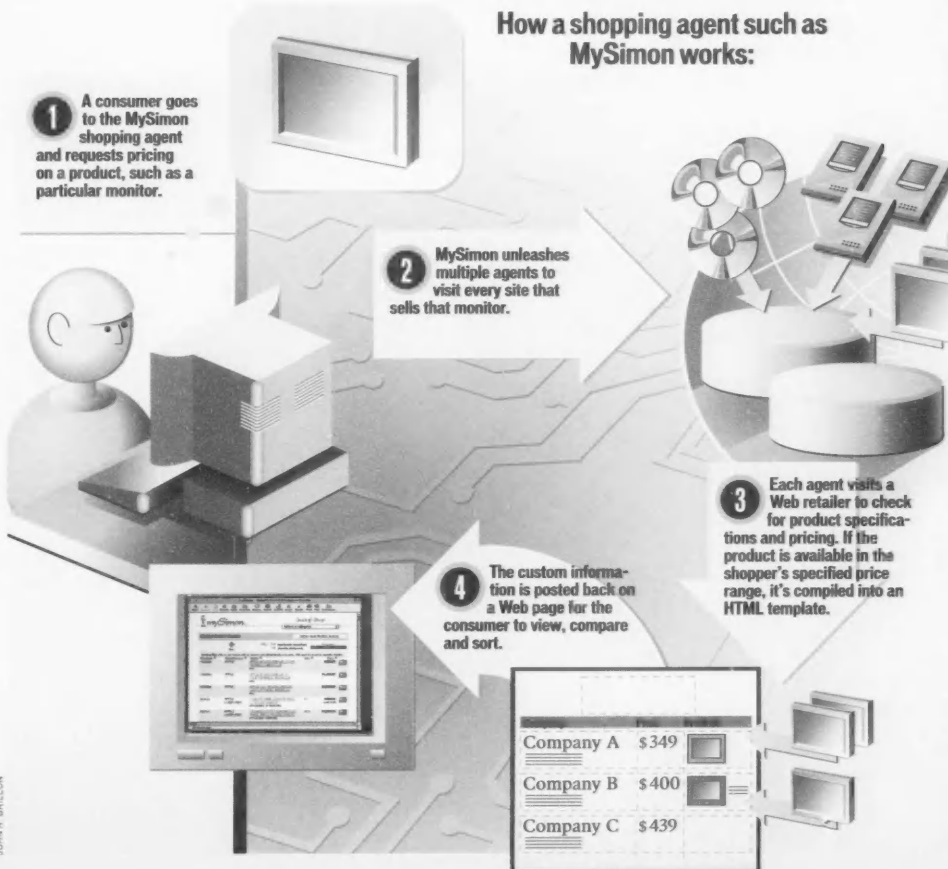
The future may be more promising, as more mainstream, enterprise applications look to adopt smart agent technologies into their core software — allowing, say, an intelligent assistant for salespeople calling customers.

Other agents are being designed for commerce sites to interact with visitors. Those agents will be able to present information or products tailored for users based on their prior behavior.

Researchers at IBM are already testing what electronic commerce might be like in 20 years, when consumers could use agents not only to search for products, but also to make purchases, interacting with agents on a seller's site.

"There's some very cool stuff," Bonde says, but it will be a few years before the technology is in general use. ▀

## How a shopping agent such as MySimon works:



## MOREONLINE

For more information about software agents, visit our Web site: [www.computerworld.com/more](http://www.computerworld.com/more)

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at [stefanie\\_mccann@computerworld.com](mailto:stefanie_mccann@computerworld.com).

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**COMPUTER**  
THE NEWSPAPER

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# MINDING THE STORAGE

*As the amount of digital data doubles each year, IT managers struggle to keep their info under control* By Gary H. Anthes

**P**ROPELLED BY the Internet, intranets, a flood of multimedia information and applications such as data warehousing and data mining, data storage at most companies is growing faster than ever. That has information technology managers in the most information-intensive industries wondering if technology can keep up with the surging tide — and, if it can, whether they can manage it.

"It's a catch-22," says Dave Bowlan, manager of information management at Kaiser Foundation Health Plan Inc. in Pasadena, Calif. "The more people depend on medical information, the more it grows. And the more it grows, the harder it is to make it available because you have to [reorganize] and recover and deal with all the availability issues of very large databases."

In a recent survey of 250 midsize and large companies, Strategic Research Corp. in Santa Barbara, Calif., found

that disk storage on servers is increasing by 50% per year on average, and total storage — on desktops, servers and mainframes — is doubling annually.

Strategic Research also found that even as companies hire more people to manage the load, database administrators scramble to keep up. The average amount of storage managed by an administrator has jumped 70% in two years and is expected to nearly triple over the next four years (see chart).

"Storage capacity is growing at a faster rate than our ability to find network administrators," says Kris Newton, research manager at Strategic Research, a market-research company. "And with data basically growing out of control, there's no way for network administrators to effectively manage it." Better, more interoperable management tools are needed, she says.

## Tumbling Costs

The cost of magnetic disk storage has tumbled in recent years, and that has encouraged many companies to meet users' growing thirst for digital information by rolling in more — and bigger — drives. However, "throwing more disks at the problem" only adds to the technical and management challenges, Newton says.

But for many companies, there appears to be little choice, at least for now. Kaiser must keep detailed medical records for its members online for as long as they're patients.

That means decades, in some cases. In its Northern California region alone, Bowlan says, the company adds the equivalent of an IBM 3390 disk drive — with 3G bytes to 9G bytes, depending on the model — every week.

Bowlan and other IT managers say storage-management products are improving but aren't as interoperable as they should be. Unix tools in particular are growing up, they say. In December, Sun Microsystems Inc. introduced StoreX,

an open-standards-based development kit that enables vendors to include in their storage products data services — such as alerts, diagnostics, backups and mirroring — that are interoperable across networks of heterogeneous devices. Several major vendors now are developing StoreX-compliant storage-management products.

Capital One Financial Corp. in Falls Church, Va., has a staggering 18T bytes of storage on its mainframes and enterprise

## What's in Store for Storage?

If you're wondering where you'll put that petabyte of digital detritus five years from now, you might want to visit Carnegie Mellon. The university, the National Science Foundation and 25 companies are spending \$11 million this year on 78 storage research projects.

A goal of the center is to develop magnetic disk systems able to store data at a density of 100G bits per square inch — about 20 times better than what's available today. Bob White, the center's director, says working prototypes should be available in 2001, with commercial products available a year later. Further out, White says he hopes to develop a complete system-on-a-chip. One side of the chip would contain processor, memory, I/O circuits and other electronics. The other would hold a 10G-byte silicon storage device based on microscopic "probe" read/write heads. "We have already demonstrated the feasibility of these probe tips," he says.

Other projects at the center include the following:

- Development of "speculative execution" algorithms, through which an application dynamically generates "hints" as to what disk data may soon be needed. The application reads and caches that data in advance, saving later I/O delays.
- Research in magnetic tape is aimed at boosting densities from 100M bits to 6G bits per square inch and quadrupling recording speeds to 20 meters per second.
- The use of high-resolution techniques, including blue lasers, is aimed at boosting the density of optical disks from 5G bits per square inch to 40G bits per square inch over the next two to three years.
- Research in three-dimensional holographic storage aims to achieve storage densities of up to 1T bit per cubic inch and transfer rates of up to 1G bit/sec.

— Gary H. Anthes

## Drowning in the Information Flow

*As data storage soars, so does the projected workload of the database administrator:*

CATEGORY	1998	1999	2000	2001	2002	2003
Average disk storage per site (in G bytes)	214	315	457	651	912	1,255
Average number of administrators per site	4.0	4.5	5.0	5.5	6.0	6.5
Capacity managed per administrator (in G bytes)	53	70	91	118	152	193

SOURCE: SURVEY OF 250 U.S. AND CANADIAN COMPANIES BY STRATEGIC RESEARCH CORP., SANTA BARBARA, CALIF.



servers and another 8T bytes on its desktop systems.

The company is piling up data in its call center alone at the rate of 10G bytes per week, says John Pastore, chief technology officer.

Capital One used IT to grow its loan portfolio from \$1 billion to \$17 billion in 10 years. The company offers credit cards in 3,000 combinations of rates and features, each tailored to a particular risk and use profile derived from data mining and data modeling.

But keeping all that customer data online for analysis isn't easy. "Users would love to have 10 years online, but if we ever had to recover a crashed database, it would take weeks — and that's not practical," Pastore says.

As a result, the company keeps transactions online just three years before moving them to tape silos.

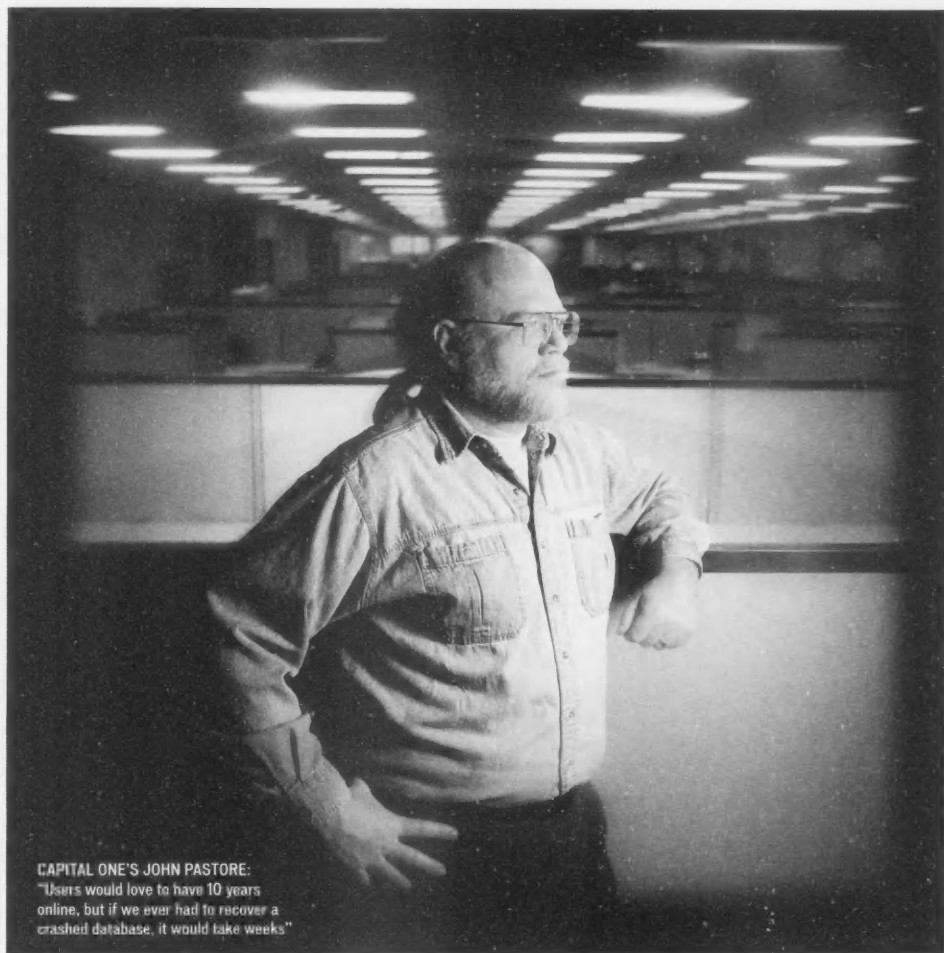
One way to avoid the time it takes to restore from tape is to back up disks to other disks. That practice is becoming increasingly feasible as the price of disks falls and their capacity increases. Capital One has begun backing up some data using the Symmetrix Remote Data Facility from EMC Corp. in Hopkinton, Mass., which provides mirroring of data between two physically separated systems.

But Pastore is hedging his bets by looking at other data backup technologies, such as computer output to laser disks. He even has someone assigned to follow research projects in three-dimensional holographic storage at IBM and Stanford University, he says.

Indeed, progress in data storage technology is proceeding so fast on so many fronts that some experts say it will stay ahead of the exploding demand for capacity.

The density at which data could be stored on conventional magnetic disks increased 30% annually for many years but recently has been rising at 60% per year. And increases in disk rotation speeds, data-transfer rates, control algorithms and the like all are improving smartly as prices drop (see story, previous page).

Bob White oversees research at the Digital Storage Systems Center at Carnegie Mellon University in Pittsburgh. Although improve-



**CAPITAL ONE'S JOHN PASTORE:**  
"Users would love to have 10 years online, but if we ever had to recover a crashed database, it would take weeks"

ments in storage technology have been evolutionary, they may have large and sudden implications for users, he says. "The cost-per-bit now for disks is almost as low as for tape. And when the cost curves cross, the rationale for a tape system goes away," he says.

#### Eliminates Bottleneck

The research center is working on Network Attached Secure Disks — which have smart embedded controllers — and the emerging and related storage-area network (SAN) technology.

That eliminates the host computer as a performance bottleneck by allowing client machines to access storage directly on a high-performance,

scalable network such as Fibre Channel, a data transport protocol. That frees up servers for other purposes, allows storage devices to communicate directly with one another and keeps tasks such as backup and recovery from clogging a company's IP networks. Performance and scalability improve, and manageability is aided because storage is centralized.

Arno Penzias, a former chief scientist at Bell Laboratories, says SANs may some day carry more traffic than computer-to-computer networks.

"Just wait till companies figure out that they can glean data from video clips," he says. "For example, a Las Vegas casino company is looking at video-based recognition tools to spot

high-rollers and card counters."

Because his storage challenges will get more difficult, Bowlan says he's considering several storage alternatives, including SANs. The geographically decentralized Kaiser is building a national clinical information system so that its 8.5 million members can be treated anywhere in the country.

In addition to centrally storing a massive amount of data, the company will "cache out" subsets of the data to clinics around the country.

Data in the central repository also will be partitioned — possibly onto different systems or drives. Putting data where it's most likely to be needed and partitioning the central da-

ta stores will improve processing efficiency, availability and manageability, Bowlan says. He cautions to plan well in advance for storage in such big systems. "You really have to design for large size," he says. "You can't evolve small into large very easily."

John McArthur, an analyst at International Data Corp. in Framingham, Mass., agrees that it no longer makes sense to let data storage just evolve.

"Companies should be creating a storage infrastructure, or utility, to support a range of applications and operating systems," he says. "Just as you don't let every department buy its own telephone system, you shouldn't let every department buy its own storage solution."

# Personalization

**Your Web site can help you leverage information about your e-commerce customers. But it involves complex Web technologies. The operators of five e-commerce sites share their experiences in personalization**

By Christopher Lindquist

**S**AVVY BUSINESSPEOPLE have long used the personal touch to keep customers coming back. Whether it be a waiter who understands what you mean when you say "the usual" or the owner of a local bookstore who stocks your favorite author's latest title, personalization provides convenience and a comfort factor that can lead to extra sales.

Personal attention has faded in recent years, however, because of the perpetual hunt for lower prices. But the Web can change all that. Though not as Norman Rockwell-quaint as the friendly old guy down at the corner drugstore, personalized electronic-commerce sites can help vendors get to know their customers — and provide better service as a result.

Personalization comes in myriad forms, from the e-mailed newsletter to customized Web catalogs that change appearance based on a customer's interests or buying habits. But getting involved in personalization isn't something to take lightly.

First, there are technology hurdles. Sites that automatically reconfigure themselves based on user preferences are difficult to build, requiring considerable server-side engineering and investment. Flat HTML pages won't do the trick. Instead, you will have to integrate more complex Web technologies like Java, cookies and JavaScript with back-end tools such as Microsoft Corp. Active Server Pages and Common Gateway Interfaces that will provide connections to databases filled with your customers' information. Even the simplest personalization efforts introduce companies to new issues of protecting the privacy of visitors. According to Cynthia Hollen, president and co-founder of Internet consulting firm Knowledge Strategies Inc. in New York, those engaging in personalization need to ask, "Are customers going to take personalization as an invasion, or are they going to take it as a value-added service?"



DAVID SPALE

# in e-commerce

The good news for sellers is that, when done correctly, personalization can provide significant rewards for both vendor and customer. Customers gain convenience when sites begin to "remember" their preferences and provide information in a more natural way. Vendors, meanwhile, gain insight into their customers' needs and can help guarantee extra sales through more carefully targeted marketing.

There's much to learn from companies that have already taken their first steps. *Computerworld* located five sites that have been using personalized electronic commerce to varying degrees and asked those who operate them which technologies have worked, which haven't and what the future holds.

## ESTÉE LAUDER

[www.clinique.com](http://www.clinique.com)

**How big is it?** Nearing half a million registered users  
**Noteworthy:** The site can recommend skin care and skin color items based on user-entered preferences.

Personalization may be cutting-edge for most companies, but it's old hat for Estée Lauder Cos. The company's Clinique site has offered visitors an online, customized consultation since 1995.

The Clinique line is built around "skin typing" — customers answer eight questions about their skin (describing its color and degree of oiliness, for example) that determine which products they should use. The multiple-choice questions were ideal for Web site data-collection techniques — something Angela Kapp, vice president of special markets and new media at Estée Lauder, realized. She felt that once a user answered the questions, product recommendations could be fed to the user from a database.

Clinique already had a head start. It had created a product database (in Oracle Corp.) before it set up shop on the Web. But finding a design firm capable of building a site around the information was difficult in 1995. Fortunately, Estée Lauder's site-creation partner, CKS (now part of USWeb/CKS Corp.), put Kapp in touch with a Unix developer who was willing to take on the chal-

lenge of developing from scratch the Perl scripts used to connect the site to both Clinique's databases and an electronic data interchange back end.

But Clinique faced more than just technical questions. It also worked through some ethical ones. Long before privacy statements were de rigueur, Kapp found herself against using cookies to track user movements. "I didn't think [it was right to put] something on someone's hard drive without us telling them," she says. As a result, the original site required users to enter their name and password on several pages during each visit — a situation remedied on the current site by clearly asking user permission to store the information for later use.

The outcome was worth the hiccup along the way — such as trying to find someone capable of creating the site and dealing with privacy issues. Clinique built its business on having customers visit its department-store counters — a potentially intimidating experience for some people. The Web site lets potential buyers receive a similar experience, but without leaving home. In fact, 29% of Clinique's registered site users had never used or had stopped using the company's products.

The success of online skin typing has driven other innovations. Registered users can enter their addresses to receive product information and free samples. They can create lists of "favorite" products that remain intact between visits. Kapp wants to further leverage the power of her database to provide customers with tips and buying suggestions based closely on their preferences and habits. "That's the best kind of selling, if you can do it the right way," she says. "That's the vision of where I think the brand can go."

## DOW JONES

[www.djinteractive.com](http://www.djinteractive.com)

**How big is it?** 600,000 subscribers

**Noteworthy:** Custom Clips let users automatically search 40,000 articles per day for relevant news.

Dozens of sites can show you the news, but Dow Jones & Co.'s Dow Jones

Interactive ([www.djinteractive.com](http://www.djinteractive.com)) is different. Nearly 600,000 customers pay to search through stories from its 6,000 licensed and internal publications. That's a huge amount of data to filter, and the company has applied personalization to manage the task.

The most important feature is Custom Clips, which allow users to create folders based on predefined topics — such as agribusiness or IBM — or to build their own using custom keywords. When the site retrieves relevant articles, it can post them to a database-generated Web page or send the stories to the user's e-mail address.

At the service's core lies Verity Inc.'s ([www.verity.com](http://www.verity.com)) Profiler engine, says Tim Andrews, vice president and editor for enterprise products at Dow Jones. Every word of the 40,000 stories sent to the service each day goes through the Profiler, where it can be compared with the various searches users have requested.

The Verity engine isn't the only piece of the puzzle. The product is surrounded by relational databases that store the indexed hits and the full text of every story. And there's a mail server that sends the requested data to the customers. Integrating all the products wasn't easy, Andrews says. Just picking the tools took time, and the company's strict requirements meant working closely with Verity as it built the profiling software — rather than simply buying a product off the shelf. "Certainly, from beginning to end, it was a longer process than you might typically want," Andrews says, referring to the nearly two-year development cycle.

But the results have been worthwhile, he says. With the new Web-based system, Dow Jones has been able to start moving users away from its older Macintosh and Windows clients. It also has allowed them to reduce the number of in-house databases from seven or eight to two — those from Informix Corp. and Oracle. Dow Jones also is moving from a proprietary Web template language to the more commonly used Active Server Pages, which will make it easier to find tools and trained employees. Andrews takes a bit

*Web sites, page 76*

ESTÉE LAUDER'S ANGELA KAPP has offered online visitors customized consultation on the Clinique site since 1995

CLINIQUE





**Certainly, from beginning to end, it was a longer process than you might typically want.**

TIM ANDREWS, VICE PRESIDENT  
ENTERPRISE PRODUCTS  
DOW JONES

Continued from page 75

of credit for helping other sites with their personalization efforts. Verity's Verity Developer Kit contains capabilities that result from Dow Jones' attempts to push the indexing envelope.

"I would say that we actually added to the ability of other companies in some respects to be able to offer a personalized product," he says.

## NETMARKET

www.netmarket.com

**How big is it?** More than 2.5 million sessions per month

**Noteworthy:** Choosing the human touch over technology

Getting personal without people — look at the automated profiling efforts of most sites, and you might think profiling was the Holy Grail of online personalization. Web retailer Netmarket (www.netmarket.com) has something a little more human in mind.

Netmarket's parent company, Cendant Corp. (www.cendant.com), has sold many types of products for more than a decade, using both the phone and online services such as America Online and Prodigy. But the Web has opened new possibilities. Online superstores act as gateways to more than a million books and more than 800,000 consumer products — from computers to perfume to stereo systems.

However, finding what you need in such a sea can make shopping a chore. So Netmarket has implemented several search systems and the now ubiquitous e-mail newsletter to help give users some direction. It also offers a simple

Gift Finder that asks customers to choose a category, such as Sports Enthusiasts, and a price range so it can retrieve a handful of suggestions from Netmarket's massive databases.

But giving customers such direct access to product information has raised a challenge. In the past, customers talked to human intermediaries who could decipher some of the sometimes cryptic data that described product features and specifications. On the Web, that information had to appear in plain English. "It really all came down to content," said Lisa Dossbach, a Netmarket vice president, and it was content that Netmarket had to create.

But even with the most clearly written descriptions, such automated services are hardly personal. To help matters, the company offers something even more retro-innovative — human beings. If customers can't find what they're looking for by browsing through one of the online catalogs or with the help of an automated search tool, they can send messages to Netmarket's Personal Shopper or Ask the Expert, and a living, breathing person replies with purchase suggestions or product information. The drawback is that, where you used to have just a server, you now have employees as well. The advantage, according to Dossbach, is that the human assistance helps eliminate the "cold feeling" of a fully automated search, plus it provides one more chance to hold onto customers who can't find the appropriate products on their own.

The company is also investigating ways to enhance its personal connections even further by means such as a chat client that would allow customers

to instantly start a one-on-one conversation with a trained Netmarket representative. "We're exploring where the economics might shake out and what the best functionality for us to deploy with chat might be," she says. "We don't want to just sit there and answer a lot of order questions. We'd rather help [customers] find products on the site or answer questions on a product."

## HASBRO INTERACTIVE

www.hasbrointeractive.com

**How big is it?** More than 8 million hits in December 1998

**Noteworthy:** The site provides alternative looks depending on the customer's Web origin.

The games people play add up to big business. Just ask Hasbro Inc., the maker of both the longtime favorite Monopoly and the recent craze called Furby. Now, the company's electronic gaming division, Hasbro Interactive (www.hasbrointeractive.com), seeks to spread the fun even further by turning its site into an interactive, personalized experience for game players of all ages.

The goal, according to Whitney Grimm, vice president of Internet marketing, is to develop a relationship between potential customers and Hasbro brands and to make the shopping experience as comfortable as possible.

But Hasbro didn't want to do everything on its own. Instead of pulling together an in-house team to create its site, the company searched for outside partners with the experience and ideas it needed. It's a process Grimm would

# FAST FACTS

## Web Sites On Personalization

www.brint.com/elecomm.htm  
@Brint.com bills itself as the Biz Tech Network, a virtual organization that collects information about business, technology and knowledge management. It provides lists of books, excerpts from scholarly papers, and magazine and news articles.

It also offers links to vendors and user companies that handle electronic commerce and even downloadable templates for building an electronic-commerce site. Some links are simply titles or three-word descriptors; others are accompanied by one-sentence outlines

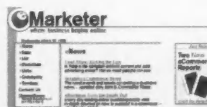
telling users what they can expect at the other end of the link.



www.computerworld.com  
Computerworld's Web site includes a resources section that features links to articles and other sites dealing with electronic commerce. It references not-for-profit information sites and those addressing the relationship between electronic commerce and electronic data interchange.



www.commercenet.com  
CommerceNet is a consortium of vendors in the electronic-commerce sector. It includes discussion areas for topics such as catalog interoperability and smart cards.



www.emarketer.com  
eMarketer pitches itself as "the

authority on business online."

eMarketer's Web site includes a collection of reports and news clips from other information organizations, as well as its own research reports on topics such as the size of various electronic-commerce markets.

Some excerpts from

www.emarketer.com

"Time to get out your checkbooks.

A recent report from International Data Corp. (IDC) said that corporate spending on Internet-related technology has now reached 'frantic' levels, with sales expected to hit \$85 billion in the U.S. alone this year. Worldwide spending will climb to \$203 billion by 2002. By comparison, eMarketer notes that tech-

nology deployment spending was \$62 billion last year, according to IDC. According to IDC, the frenzy is being fueled by the move toward e-commerce and will continue 'well into the new millennium.'

Looking at the growth of particular industries, IDC forecasts Internet technology spending as follows:

- Financial services companies, \$16.6 billion
- Manufacturing companies, \$24 billion
- Retail businesses, \$6.2 billion
- Online media and communications companies, \$10.7 billion.

IDC says the rapid spending growth will be an outcome of increased corporate confidence in



recommend for other companies, he says, as it requires a smaller up-front investment. And a company can always decide later to go in-house.

After talking with several potential vendors, Hasbro chose electronic-commerce enabler Internet Commerce Services Corp. (ICOMS) ([www.icoms.com](http://www.icoms.com)) and site design firm Thunder House ([www.thunderhouse.com](http://www.thunderhouse.com)) and implemented several personalization features. As on many electronic-commerce sites, visitors can fill out forms with their e-mail addresses and brand preferences. Hasbro will e-mail them information about new products, software patches and promotions. But the company doesn't stop with the not-so-personal newsletter approach. Other features are more subtle.

For instance, if a customer wants to buy a product from Hasbro's Microprose line, Grimm says, "Hasbro's site passes the branded user interface information to ICOMS's sales environment via a custom-developed Open Market Inc. Transact 4 application. As a result, Hasbro can give the customer a familiar Microprose-branded look even when moving from one back end service to another." Also, instead of a standard type-in-a-keyword search engine, the site includes a Find Your Fun tool. Users enter the age range they're interested in and a gaming category such as Strategy. The site selects games that fit the criteria, giving users access without making them wade through long lists.

But collecting even the most innocuous information poses a particular hazard for Hasbro: Games often appeal to children, and many parents get nervous when companies ask for information from little Johnny or Janie. So, Hasbro

has implemented a privacy statement visitors can reach by clicking a prominent link on the site's front page.

Grimm says Hasbro is always investigating ways to update its approach to privacy. "We want to respect an individual's privacy, and yet we want to give them information useful to them," he says. "If they can give us a little information about themselves, then we can do a better job."

## HALLMARK CARDS

[www.hallmark.com](http://www.hallmark.com)

**How big is it:** Largest domestic greeting card maker

**Noteworthy:** Reminder lets users store important dates and receive e-mail notification as they approach.

When your whole business is based on getting personal, it makes sense that your Web site should do the same. That's why it's no surprise that the Hallmark Cards Inc. site ([www.hallmark.com](http://www.hallmark.com)) has been adding touches for more than two years to make customers feel at home.

The site's centerpiece is the online Reminder Service. By selecting dates within a Microsoft Active Server Page-based calendar, users can enter upcoming birthdays, anniversaries and other events. When a date approaches, the site sends an e-mail to users to give them an electronic nudge. Though it may cut down on sales of those "belated birthday" cards, the tool provides an ideal way to keep customers coming back to the site on a regular basis.

When a user returns to the site and chooses a gift to send — an Easter bouquet or a box of chocolates, for in-

stance — he can pick the recipient's address from a drop-down list of those in his personal address book, which resides on the company's servers, rather than having to look up and type in the address with every order.

But Paul Inman, interactive marketing manager at Hallmark, warns that although such features sound compelling, information technology managers looking to implement them shouldn't underestimate the complexity involved. "Currently, we see very few options for personalization software using off-the-shelf solutions," he says. As a result, Hallmark's development staff had to spend considerable time creating its own tools and integrating them into existing systems.

Inman also says developers need to understand that today's personalization tools work best when combined with human intervention to help guarantee relevancy to the end user. For instance, Hallmark offers customized Electronic Greetings — digital cards (based on multimedia player technology from Media Synergy) that arrive at the recipient's e-mail address. Some Electronic Greetings let customers change the card's content, so a child's birthday card might read "Happy Birthday Tiffany!" But creating the cards requires input from Hallmark designers, while site managers must make sure that the proper cards are promoted on the site for specific occasions.

"The technology is growing smarter," Inman says. "But it's still only as good as the input you give it." ■

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**The technology is growing smarter, but it's still only as good as the input you give it.**

PAUL INMAN  
INTERACTIVE MARKETING MANAGER  
HALLMARK CARDS



electronic commerce as a viable business strategy."

"A large majority — 76% — of CEOs in traditional consumer businesses participate in the strategic decisions for their online initiatives. But only 24% view those initiatives as an integrated part of their core business, according to a new study by Jupiter Communications Inc. in New York.

Of 60 top executives surveyed, 82% said they rate the success of their Web sites by the number of online customers or users; 53% viewed revenue as most important. Jupiter says executives will have to integrate those factors into their traditional businesses to see the

true value of their Web initiatives.

And 85% of those executives said profitability would become one of the top factors for success, according to Jupiter."

## Tips on Personalization

Start small, but think big. That's one of the keys to using personalization in electronic commerce, according to Stanton Taylor, a specialist in Internet strategies at Andersen Consulting in Chicago.

Computerworld asked Taylor to outline some common mistakes he's seen in personalization attempts, and to offer advice to companies that want to add personalization.

"The No. 1 mistake is under-exploiting what this thing can do," Taylor says. He says too many managers go into personalization limiting their plans to features such as prefilling order forms with credit card numbers. "They really should be using the concept of the shopkeeper in *Little House on the Prairie*," he says, pointing out that a 19th-century country store owner knew each steady customer's likes, dislikes and needs. Even starting with simple features, today's retailer can at least shoot for advanced artificial intelligence features and a Web page or catalog that morphs to highlight products that match an individual's buying patterns.

However, that "think big" approach doesn't mean you jump

into the deep end of the personalization pool. "The more clever you get, the more complicated it gets, and the more customizing you have to do. . . ." Taylor says. "You have to say, 'Let's do the simple things first.'"

The following are other observations and tips from Taylor:  
■ A common surprise that project leaders run into is the size of a personalization project, in part because it's so hard to get the various managers on the same page in terms of what personalization means and what they want to accomplish.

Corporate managers should think of personalization not as a technology but as a broad business concept.

■ If you start with a simple effort and build up to "the full nine yards" of a personalization project, plan at least a nine- to 12-month effort.  
■ Another mistake is "thinking about the personalized Internet effort as a separate distinct approach," and not something integrated with the existing call center.  
■ Yet another mistake is to believe that all you have to do with your Web site is replicate online what the call center is already doing.

One of the biggest challenges involves legacy systems and systems integration. Users want to access all the data collected about a customer, and that may mean building links to many diverse corporate applications.

— James M. Connolly

## Sabre Takes Off

BY LESLIE GOFF

**W**HEN A TEAM of American Airlines and IBM programmers set out in 1960 to build the first computerized transaction-processing system, the Sabre airline reservation system, most folks thought they were crazy.

American was spending \$150 million on the system, a chunk of change that, at \$4.5 million a pop, could have bought a fleet of 707 jets. Instead of investing the money in its core business, it was putting it into "a lot of mysterious boxes that would sit in a room somewhere," recalls Cliff Taylor, a functional designer at American who worked on the project.

"A lot of people were convinced we were loonies, but we were supremely confident because we didn't know any better," Taylor says. "There ... was not much thought about failure."

Sabre's genesis, ironically enough, came about on a plane six years earlier, when C. R. Smith, American Airlines CEO, had serendipitously sat beside a top-flight IBM salesman, Blair Smith. Their conversation — en route to Los Angeles from New York — about the overwhelming volume of data involved in the airline reservation process led to a joint IBM/American study, released in 1954, on the feasibility of an automated reservation system.

Five years later, the two companies were still trying to get something off the ground when the technology created at MIT for the SAGE (Semi-Automatic Ground Environment) air-defense project became available for commercial use. SAGE, a technological response by the U.S. military to the Cold War, gave birth to the technologies that enabled interactive, real-time computing — and contributed more to



Through the mid-1940s, airline reservations were recorded on colored index cards, which were arranged in a lazy Susan

commercial data processing than to the national defense. These technologies were put to use on the Sabre project.

By 1960, American had a semiautomated system, the Reservisor, but reservation agents still used a largely manual process of phone calls, teletype messages and paperwork to book flights. The error rate was 8% — rather high, but the best any airline was managing at the time, Taylor

says. It was hoped the hefty Sabre investment would reduce the error rate without increasing the cost of operations. IBM and American set up shop in midtown Manhattan.

Taylor, now 66, retired and living in Tulsa, Okla., where American relocated the Sabre

system in the 1970s, came to his position from the airline's reservations department. He was in charge of screening the applicants. He couldn't hire a bevy of programmers off the street — there simply weren't that many — so he trained his own staff.

He administered IBM's programmer aptitude test to, and conducted one-on-one interviews with, 650 applicants from within American's reservations department. "It was remarkable," Taylor says of the number of people who applied for the project, "but this was back in the days when computers were still referred to as electronic brains. People were curious."

American's first requirement for developers was that they understand the busi-

ness process — an idea that has flourished in the 1990s, after the period of division between techies and end users. Since 1960, the evolution of the information technology professional has come full circle.

"Sabre was an ideal blending of an intelligent user community ... [which] came in and learned to be computer people," Taylor says.

By the time Sabre was fully online in 1965, in a customized data center in Briarcliff Manor, N.Y., the reservation error rate had dropped to less than 1%, Taylor notes. Moreover, although it has been tweaked and has grown more complex, Sabre today is roughly the same system the team built between 1960 and 1962.

It connects more than 30,000 travel agents and 3 million registered online consumers with more than 400 airlines, 50 car-rental companies, 35,000 hotels and dozens of railways, tour companies, ferries and cruise lines. Hardly a single IT shop supporting today's online transaction processor-driven call center systems can deny its debt to the programmers of 1960. ▀

Goff is a frequent contributor to Computerworld. Contact her at [lgoff@ix.netcom.com](mailto:lgoff@ix.netcom.com).

### MORE ONLINE

For an insider's view of how Sabre was developed, visit our Web site, [www.computerworld.com/more](http://www.computerworld.com/more)



## Technology Advances

■ The first small, interactive minicomputer, the PDP-1, is developed by Benjamin Gurley at Digital Equipment Corp. Following the advice of the venture-capital firm that funded the corporation, the machine isn't called a computer; it's termed a **Programmed Data Processor**.

■ Cobol now runs on Univac II and RCA 501 computers; programming no longer has to be done separately for each computer brand.

■ Ted Nelson conceives his futuristic vision for **hypertext: Xanadu**.

■ One of the fastest and most versatile computers of the time, the CDC 1604, is delivered to the Naval Post Graduate School in Monterey, Calif. Built by Seymour Cray, the CDC costs about half that of comparable systems of the time.

■ Honeywell Regulator Co. in Minneapolis introduces the H-800, a large, solid-state system. Among many other features, the computer offers parallel processing.

## Born in 1960

- Will Wright, creator of the simulation game **SimCity**
- David Duchovny, Fox Mulder on **The X-Files**
- Branford Marsalis, musician

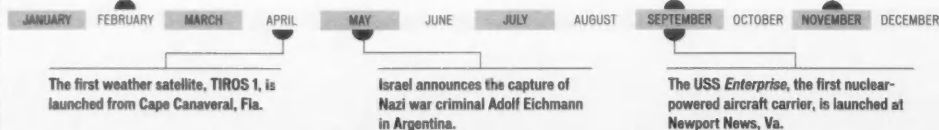
## Other Notables

- Average price of a movie ticket: 75 cents
- Tickets to see the Boston Red Sox at Fenway Park: \$1 to \$2.75
- Best Picture: **The Apartment**

Four African-American college students begin a sit-in at a Greensboro, N.C., lunch counter that refused to serve them.

The first televised U.S. presidential debate is held between John F. Kennedy and Richard M. Nixon.

Kennedy defeats Nixon in the presidential election.



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# The Many Flavors Of Oracle . . .

...and how to get a career taste

By Leslie Goff

**O**RACLE SKILLS routinely turn up on information technology managers' most-wanted lists. But Oracle Corp. software isn't just a database anymore. It's also a development platform, a range of business-unit applications and a data warehouse. So if you're a database professional or your job includes working with corporate databases, just what should you focus on to become an Oracle master chef?

Computerworld spoke with two IT managers, a consultant and a senior database administrator for the secret recipe of Oracle success.

**CW:** What are the fundamental Oracle skills that you must have to qualify for Oracle-related jobs?

**PETOSA:** Setting up the databases, configuring the server, understanding how to tune the database engine, familiarity with a SQL and PL/SQL [Oracle's procedural language version of SQL], creating table space and how to move a database and database application from a test system to a production system.

**CITRON:** Be up-to-date on the latest version of Oracle [Oracle8 and Oracle8i] and the latest version of Developer [a tool used to create forms and reports], including the Web-enabled version of forms. The DBA [database administrator] has to understand the basics of forms development, and developers have to do some database administration. And you have to be able to talk to end users, especially in a small or medium-size organization where the help desk may refer calls directly to the DBA.

**ANSTEY:** For an applications developer, understanding relational database theory, like the principles of normalization and concepts about how data is handled.

**CW:** What Oracle skills can put one candidate over another?

**PETOSA:** Setting up replication and supporting roaming users. It's also difficult to find programmers who understand fully how to implement Oracle as part of a greater structure like [Object Management Group's Common Object Request Broker Architecture] and tie it into e-commerce. People with both technical database skills and business skills. In my opinion, you have to be a tech guru first.

**THERIAULT:** The ability to establish solid database backup and recovery procedures — having a proven track record of being able to effectively recover a database, especially a large one.

**CITRON:** For DBAs, proper indexing. Sometimes indexes have combinations of fields, and they can conflict with each other. So you have to know when to use indexes and where to put them. Knowing which tuning tools to use and when. And knowing the quirks and interactions between the database and operating system is definitely worth a premium. For developers, being able to work closely with the DBA, knowing where the indexes are so they can structure a query properly. Also, writing objects or procedures to the database instead of storing them in forms.

**ANSTEY:** It's hard to find people with a good understanding of Oracle applications, like Financials and Manufacturing. Also, people who have a strong foundation in the Developer product and have a background in C, C++ or

Java. Now that Java will be a part of Oracle8i, the demand for Java experience will increase dramatically.

**CW:** What skills complement Oracle skills?

**PETOSA:** TCP/IP and Internet skills. If you're a DBA, systems skills, because you must understand the networking environment and the operating system. Also, a thorough understanding of Web servers and how they operate.

**CITRON:** For developers, knowledge of the desktop operating system that users are running. For DBAs, knowledge of the server operating system. Also, knowledge of the hardware — knowing what is appropriate in terms of hard-disk size when sizing a new system — and knowledge of some of the more basic databases, because often people want to join data from Oracle and their own databases.

**ANSTEY:** Experience in structured programming and standards, like the [computer-aided software engineering] methodology, which used to be the flagship methodology for Oracle developers. Now it's transitioning to a round-trip engineering methodology and getting behind component-based development.

**THERIAULT:** Problem-solving, troubleshooting. People who have a compulsion to read everything — people who know all the ingredients listed on their cereal box will be great DBAs because they have a compulsion to read and remember things, and that's vitally important to being a good DBA.

**CW:** What Oracle experience, training and certification do you look for on a résumé?

**THERIAULT:** This is a dual-edge sword. I would hate to pass over someone who has a minimum of training because they might be the shining star of tomorrow. And just because they have certification doesn't necessarily mean they have hands-on experience. The Chauncey certification for Oracle7.1 indicates that someone is very good. It was put together by IOUG [International Oracle User Group] DBAs, so it was very real-world. It was the very first certification, and it's still available on the Web.

**PETOSA:** Experience weighs most heavily — I like someone with over four years who has worked with multiple servers spread across multiple locations on an

## Necessary Ingredients

Jobs that require Oracle skills:

### SALARY POTENTIAL

#### DATABASE ADMINISTRATOR

■ Average \$70,000 to \$120,000

#### DATABASE APPLICATIONS DEVELOPER

■ Junior \$40,000  
■ Senior \$80,000

#### ORACLE APPLICATIONS ANALYST

(Business/functional analyst for Oracle Financials, Manufacturing and Human Resources)

■ Average \$50,000 to \$70,000

#### ORACLE APPLICATIONS PROGRAMMER

(Customizing/modifying Oracle applications)

■ Junior \$40,000  
■ Senior \$80,000

IP network and applications in accounting, sales force automation and applications that involve integration of Web technologies and traditional database applications. Formal training in advanced topics would be secondary.

**CITRON:** If I want a senior person, I look for someone with five-plus years, and they're not easy to find. If I want a junior person . . . I would look for two years' experience.

**ANSTEY:** I like to see a good range of exposure in using particular development tools or programming in PL/SQL where they're forced to think in different ways to solve different problems. ▀

Goff is a freelance writer in New York. Contact her at lgoff@ix.netcom.com.

## The Secret Ingredient

Candidates for the following positions who have Oracle experience can command a 15% salary premium over the ordinary base salary.

■ Systems administrator

■ Systems architect

■ E-commerce applications developer

■ Network analyst

## Panelists



**DAVID ANSTEY**  
Consultant at Aris Corp. Author of *High Performance Oracle9 Object Oriented Design* (Coriolis Group, Scottsdale, Ariz., 1998) and editor in chief of the *Oracle Development Tools User Group Technical Journal*.



**MARK CITRON**  
Board member of the Los Angeles Oracle Users Group and representative of the International Oracle User Group. Former manager of network technology and Oracle development at Children's Hospital Los Angeles.



**MIKE PETOSA**  
Chief technical officer at Pencom Systems Inc. in New York.



**MARLENE THERIAULT**  
Senior Oracle DBA at Johns Hopkins University Applied Physics Laboratory in Laurel, Md. Co-author of *Oracle Security* (O'Reilly & Associates, Sebastopol, Calif., 1998).





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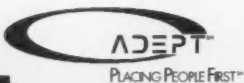
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**Sr. Programmer Analyst** wanted by IT Co. in Union, NJ. Must have 2 yrs exp designing & develop client server applications using Powerbuilder as GUI; using Oracle, Sybase & SQL server as back ends. Will use knowledge of Relational Database Concepts, Database Design Data Modeling, SQL and PL/SQL. Bachelors in Comp Sci, Electronics or Instrumentation Engg req'd. Respond by resume to: HR Dept, Patel Consultants Corp., 1525 Morris Ave., Union, NJ 07083.

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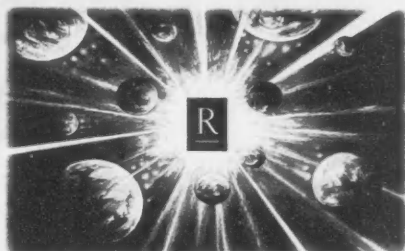
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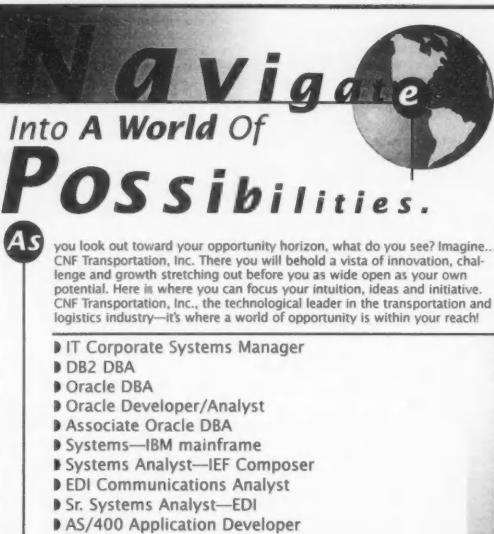
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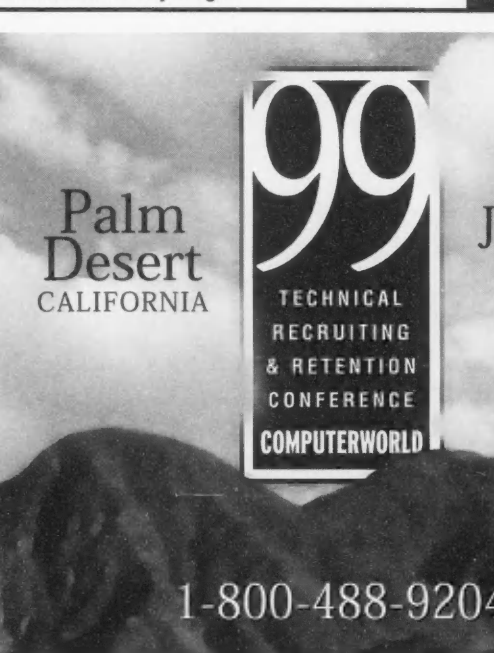
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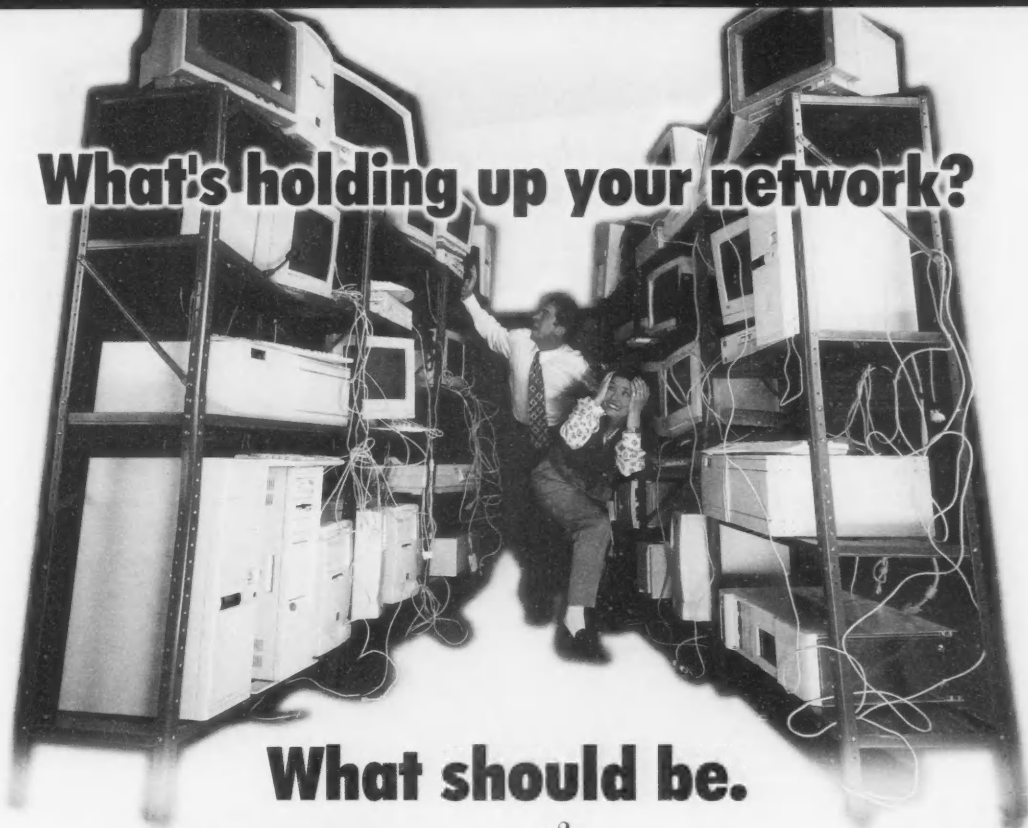
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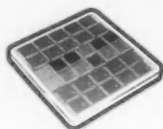
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## New strategy renews corporate confidence

BY LORRAINE COSGROVE

NOVELL INC.'s (Nasdaq: NOVL) stock price jumped 36% to close at \$26 last Wednesday. The stock, which dropped as low as \$9.37 in April 1998 and hovered in the low teens for much of last year, has been climbing since October, reflecting growing confidence among investors in its future, analysts said.

Much of that optimism is based on Novell's March 8 announcement of a new version of NetWare as a more scalable version of its directory, Network Directory Services (NDS) 8.0. Novell officials said NDS 8.0 will manage up to one billion objects, including users, applications and devices, expanding its usefulness in managing large networks and the Internet.

## Centralized Directory

NDS 8.0 was designed to integrate with existing directories, acting as a central point to manage multiple directories in an organization. The need for a centralized directory will become critical as organizations expand extranet and electronic-commerce activity, analysts said.

"Every time a user logs on to a network, visits a Web site or shops online, a directory comes into play," said Norman Fuchs, an analyst at M. H. Meyerson & Co. Managing multiple directories for the expected increase in Internet activity will be a difficult task for network administrators.

Analyst Joel Achramowicz at Pre-

ferred Capital Markets said Novell's strategy to concentrate on directory services moves it from "competing with Microsoft in the general purpose applications market to solving Internet business problems with a very powerful distributed directory technology."

Microsoft Corp.'s competing Active Directory is slated to ship in Windows 2000 later this year.

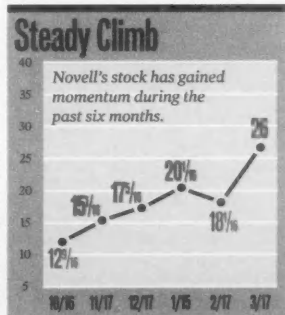
The shift has resulted in upgrades from several securities firms.

M. H. Meyerson upgraded Novell from Buy to Strong Buy on March 12. Fuchs said there's a lot of momentum behind NDS, and he sees no

real competition for Novell in the near future. "NDS will become the de facto standard in global services," he said.

Preferred Capital Markets has held a Strong Buy recommendation for Novell for the past year.

Novell's stock price climbed as high as \$26.50 last Wednesday, compared with a 52-week low of \$9.37 on April 4, 1998.



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Continued from page 1

## Microsoft

corporate users say they're seeing an improvement in customer service, an issue that has long been a negative for the software giant.

Several users said they have got answers faster, spent less time on hold with Microsoft's call center and received promises that engineers will visit their companies to help deploy Windows 2000. "Microsoft is telling us they're doing a reversal in terms of service," said Steven Sommer, CIO at Hughes Hubbard Reed LLP, an international law firm in New York with about 1,100 users.

"[Microsoft President Steve] Ballmer talked to a group of us CIOs this week... and he's taking his people out of the office and sending them to help the client. They're calling us back to see if our problem is solved... and they're better educating their people on the front line," Sommer said. He added that he's noticed a completely different attitude.

"I've never seen them this sensitive to what we're going through," he said. "They're telling us there's going to be

migration problems [with Windows 2000]. Before, they'd shove something out the door. We'd suffer with it and then complain to them... Now they're willing to send people out to help us and share some of the pain with us."

David Johnson, a member of the enterprise information technology team at PricewaterhouseCoopers in Hartford, Conn., said he sees Microsoft paying closer attention to customer service.

"I've certainly noticed that their Web site provides a lot more information," Johnson said. "And the quality of information there has improved as well."

"Microsoft has realized that with Windows 2000, that arms-length model isn't going to work because it's going to be such a dramatic migration," said Matt Nordan, an analyst at Forrester Research, Inc. in Cambridge, Mass. "They won't be able to educate their third parties, who have handled much of their support, in time. They'll have to crank themselves up a notch, put smart people on the phone and get their development guys doing implementation."

"A lot of this is catch-up,"

said Christopher Hoffman, an analyst at International Data Corp. in Framingham, Mass., who added that Novell Inc. and Oracle Corp. are well-known for their good customer service.

The new push falls in line with Ballmer's much-publicized mission to take better care of Microsoft's customers after he was named president in July.

But Microsoft still isn't getting a four-star rating from many customers. A *Computerworld* survey of 51 IT managers in January showed that Microsoft garnered an "average" rating in terms of responsiveness to support requests, emergency service and its ability to solve a problem (see chart). But a Microsoft spokesman and a user briefed by Ballmer said the Microsoft president has a plan to attack that rating.

Microsoft's Product Support and Services group, which is responsible for customer care, has been evaluating a slew of ideas to beef up support, said Joseph Lindstrom, Microsoft's director of business development within product support. He said components of the plan could be added or subtracted, but he expected efforts to include the following:

## Key Support Issues

Please rate your satisfaction with Microsoft in these areas:

	POOR	NEUTRAL	GOOD	OTHER
Availability and responsiveness of telephone support staff	28%	37%	33%	2%
The support staff's ability to solve a problem during the first contact	34%	29%	33%	4%
Emergency or mission-critical service	16%	22%	12%	50%

Base: Survey of 51 IT managers at companies with 500 or more employees

SOURCE: COMPUTERWORLD INTELLIGENCE UNIT, FRAMINGHAM, MASS.

■ Ensuring that a greater percentage of phone support personnel have practical experience before rolling out major products. Lindstrom said the hope is to have people working the call center who actually have deployed Windows 2000 by the time the product ships.

■ Sending engineers to visit customer sites — and not just Fortune 500 companies — to help them with deployment problems with Windows 2000 and other major products.

■ More options for support contracts, such as the ability to

bundle support for several products under one contract. Today, IT managers must buy separate contracts for each product.

■ Studying techniques used by known customer-service leaders from other industries, including department store Nordstrom Inc. in Seattle and catalog giant Lands' End Inc. in Dodgeville, Wis. Overall, Microsoft is "trying to get proactive," Lindstrom said.

For example, after taking an order, Lands' End phone operators make sure to ask whether they can help the customer with anything else, Lindstrom said. "We don't necessarily always behave that way. It's more like, 'Have we solved your problem? Yes?' Then, click."

To make these changes, Lindstrom said, Microsoft will look for different attributes such as customer empathy and sharper listening skills when hiring technical support people.

The new efforts follow Microsoft's moves last year to pump \$200 million into its service and support initiatives, creating a new customer-oriented business division.

And that's exactly what Microsoft needs to be doing, according to Joe Clabby, vice president of platforms and services at Aberdeen Group Inc. in Boston.

"To not be in the No. 2 position, service to the customer has to be paramount," Clabby said. "And I don't think it's been strategically crucial to them in the past." ■

## Internet Explorer Gets Mixed User Reviews

Drawbacks may be fixed in service release

BY CAROL SLIWA  
AND DAVID ORENSTEIN

Microsoft Corp.'s Internet Explorer 5.0 browser makes some key advances for Web developers, but it won't solve all their problems.

The updated browser, which was launched last week, doesn't fully support important standards that developers need to write Web-based applications, a browser watchdog group warned.

Microsoft also issued a browser alert, cautioning users about conflicts between the browser and several development tools in its Visual Studio Suite. Those conflicts mean that some programming fea-

tures will be unavailable or harder to use.

The problems should be fixed when the suite's next service release arrives in the spring, the company said.

So while Visual Studio users may be temporarily inconvenienced, developers hoping to take advantage of the latest Web standards may have to work to the lowest common denominators that all browsers support.

That's what developers at Alaska Air Group Inc. in Seattle do. They generally don't write to technologies such as Extensible Markup Language (XML) and dynamic HTML because all browser versions

don't support them, said Kyle Mossman, a senior applications analyst at the airline.

"It's kind of a pain, but I don't see any showstoppers in there," Mossman said of the Visual Studio conflicts. "XML is... still pie-in-the-sky stuff."

Cutting-edge developers will have to wait, though Microsoft officials pledged they are working on supporting the standards.

The Web Standards Project ([www.webstandards.org](http://www.webstandards.org)), a nonprofit group of 6,000 developers, agreed with Microsoft that it now has the best of the released browsers.

"It's just that it still falls short — sometimes significantly — in supporting Web standards fully," said George Olsen, a project leader for the

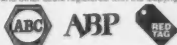
Web Standards Project. "It means Web developers will continue having to use workarounds, which is costly," he said.

Olsen said his group found the Internet Explorer 5.0 browser disappointing because Netscape Communications Corp.'s Gecko developer release — the browser engine for its Navigator 5.0 product due later this year — doesn't experience some of the same problems. Netscape's current Navigator 4.51 release, however, does have serious problems, he noted.

The Visual Studio technical problems affect Visual Basic and Visual C++ users and are described at <http://msdn.microsoft.com/vstudio/technical/ie5.asp>. ■

## MORE THIS ISSUE

We review Internet Explorer 5.0. See page 20.



## INSIDE LINES

**WANNA BET?** It's not just March Madness. Despite heavy workloads, employees still find time to **gamble at work**, according to a just-released survey by the Society for Human Resource Management in Alexandria, Va. More than half of 500 companies surveyed said they had Super Bowl pools, 10% had fantasy football leagues and a quarter said employees **bet on the date a co-worker's baby will be born**. But 56% said gambling doesn't hurt—in fact, 13% said it boosts productivity.

**NEXT UP: SECURITY** After saving the U.S. government from the year 2000 problem, the **next big headache** for federal CIOs will be network security, according to John Gilligan, CIO at the Department of Energy. At last week's FOSE conference in Washington, Gilligan said the problem isn't limited to "coordinated and well-focused" attacks against government systems originating outside the U.S. Domestic crackers are also going after unemployment and economic statistics, policy deci-

sions and judicial rulings, he said.

**KUMBAYA 2000** One of the IT chiefs who attended Microsoft's CIO luncheon last week was certainly impressed. The Microsoft executives, including President Steve Ballmer, were overflowing with newfound concern about serving customers. "I've never seen them this sensitive. [I think] they went to some retreat and **sat around a campfire and toasted marshmallows**," cracked the cynical New Yorker. "They're not crying with me yet, but I bet that's coming."

**OVERHEARD** Home Depot senior IT manager **Ron Kerr** on why small businesses should accept government Y2K help, even though it's late in the game: "If you wanted a pony for Christmas and didn't get it, do you turn down a bunny at Easter time?"... **Stephen Strong**, a lawyer representing long-term, temporary employees in a class-action suit against Microsoft: "People assume that these folks are programmers, but the truth is, you have a liberal

arts degree, you are much more likely to be a perma-temp at Microsoft."

**George Olsen**, a project leader for the Web Standards Project, on Microsoft claims that Internet Explorer 5.0 supports most of the standard for cascading style sheets: "It's sort of like being 95% pregnant."

**PUTTING A STOP TO IT** Executives often talk a good game when stressing the importance of communication, but Charles Rossotti takes it more seriously

than most. When the former chairman of American Management Systems became commissioner at the IRS last year, one of the first things he did was to **buy doorstops** with his own money—enforcing a new, open-door policy for employees at the tax agency. News editor **Patricia Keefe's** door is always open for your news tips and tidbits. E-mail her at [patricia.keefe@computerworld.com](mailto:patricia.keefe@computerworld.com) or call (508) 820-8183.

## College Kids' Hot Sites

Web sites visited most often by U.S. college students

GENERAL SITES	STUDENT-ORIENTED SITES
1 ESPN	1 Jobtrak
2 Amazon.com	2 CollegeClub
3 MTV	3 CollegeStudent.com
4 CNN	4 Animal House
5 The New York Times	5 Kaplan
6 MSNBC	6 Oasis
7 Jobtrak	7 Student.com
8 Barnes & Noble	8 Tripod
9 Sony	9 Greek Zone
10 The Wall Street Journal	10 Student Advantage

SOURCE: STUDENT MONITOR LLC (WWW.STUDENTMONITOR.COM)

# HAVE A BURGER, FRIES AND AN INTERNET CHAT

IT LOOKS LIKE the recipe for a messy keyboard, but Burger King Corp. restaurant franchisee Peter Allen Abramson claims that having a wall of Internet-connected PCs attracts more business to his store at 182 Broadway in Manhattan's financial district. Purchase a value meal and get a pass for 20 minutes of Net access with a zippy Symmetrical Digital Subscriber Line connection. Abramson recently added 3Com Corp. video cameras that let patrons snap their picture and send video postcards via e-mail. Take a look at [www.burgercam.com](http://www.burgercam.com).

• **PATRONS** at a Manhattan Burger King have access to 20 Internet-connected PCs for surfing the Web, chatting or sending video postcards

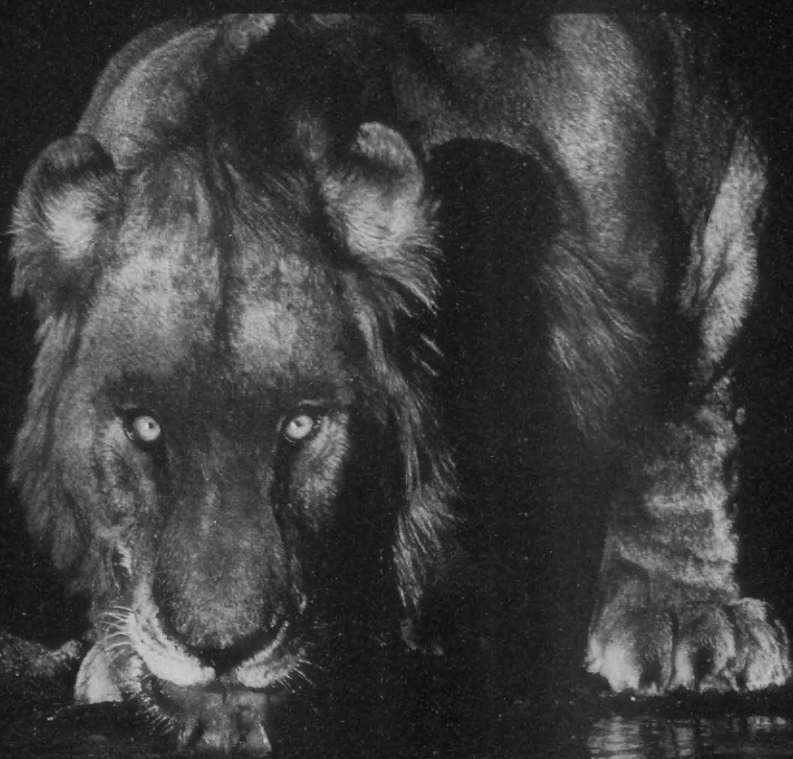


## The 5th Wave



"She comes with a lot of perks, but by the year 2000, I think a lot of them will be discarded."

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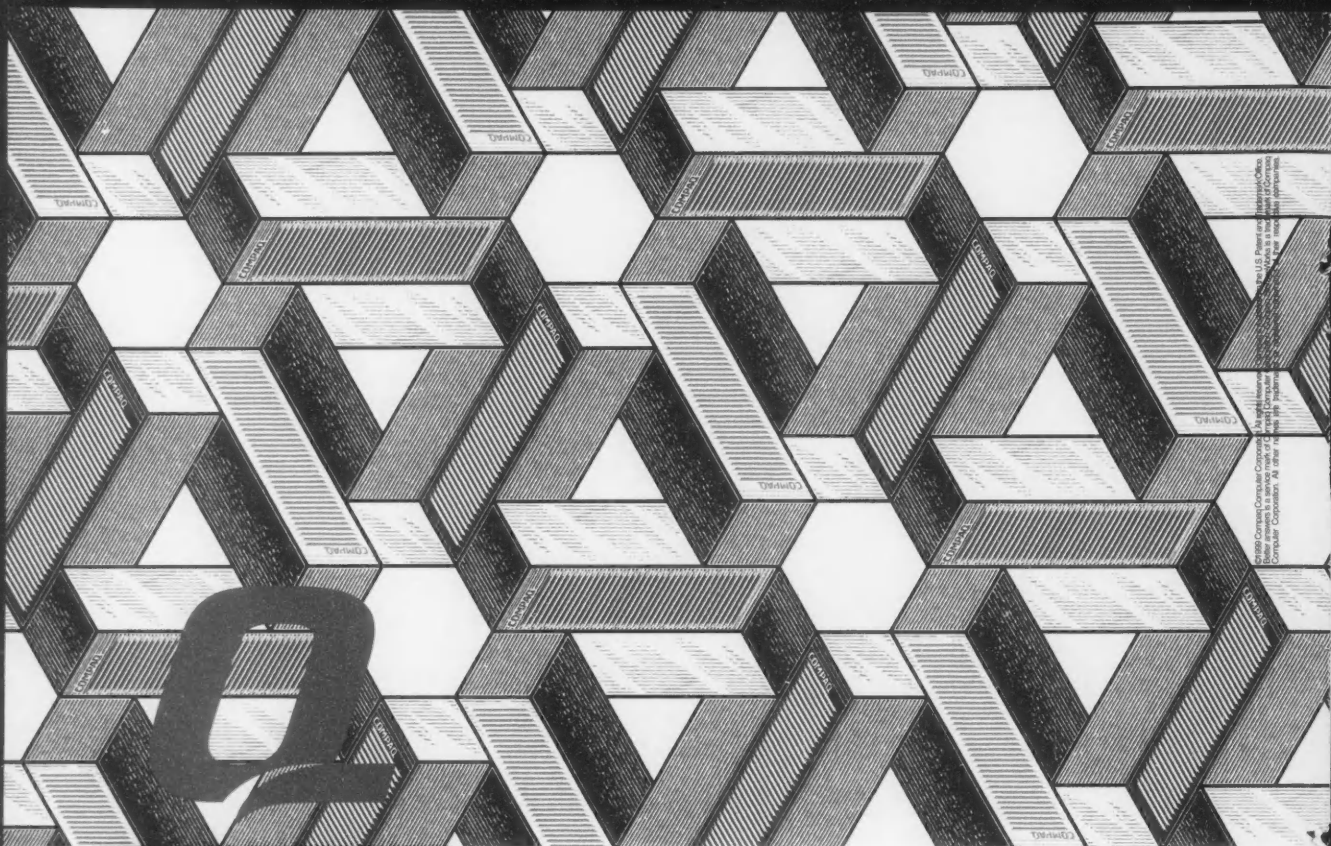
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